Journal of Nutrition and Public Health

# Understanding Balanced Nutrition Knowledge among Elementary School Children in Rural Sampang: Implications for Nutrition Education Interventions

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Received: August 10, 2025 | Revised August 20, 2025 | Accepted: September 25, 2025

**ABSTRACT:**
**Background:** Balanced nutrition is an important factor in supporting the growth and development of elementary school children. However, national data shows that the prevalence of stunting and double nutrition problems in Indonesian children remains high. This condition is exacerbated by students' low understanding of the concept of balanced nutrition, which has the potential to affect their eating patterns and health.
**Aims:** This study aims to describe the level of balanced nutrition knowledge among fifth and sixth grade students at SDN Karang Dalem 1 Sampang as a basis for developing more targeted nutrition education strategies.
**Methods;** This study used a descriptive design with a population of 80 fifth and sixth grade students. The sampling technique used total sampling. Data were collected through a questionnaire containing 20 true-false questions that had been modified from previous studies. Data analysis was performed using frequency distribution and percentages.
**Result;** The results showed that the majority of respondents were female (61%) and aged 11 years (69%). The level of balanced nutrition knowledge was mostly in the adequate category (53%), while 39% of students had good knowledge, and the remaining 9% were classified as lacking.
**Conclusion;** The balanced nutrition knowledge of fifth and sixth graders at SDN Karang Dalem 1 Sampang was mostly in the adequate category. These findings emphasize the need for more innovative nutrition education interventions, such as animated media or project-based learning methods, to improve students' understanding and support efforts to prevent double nutrition problems in elementary school children.

**Keywords:** balanced nutrition, knowledge, elementary school students, child health

Cite this article: Wulandari, A.,R., Rosanti, N.,D., Asyura, R. (2025). Understanding Balanced Nutrition Knowledge among Elementary School Children in Rural Sampang: Implications for Nutrition Education Interventions. Journal of Nutrition and Public Health, 1(3), 98-106.





DOI:

## INTRODUCTION

Balanced nutrition is an important foundation for the growth and development of primary school children(Hadiyani, 2024; Jusriani, 2023; Setiaarwati & Wahyudin, 2024; Wigati et al., 2022) . Lack of nutritional knowledge has been proven to have a serious impact on nutritional status, ranging from stunting and malnutrition to obesity. UNICEF data shows that the prevalence of stunting is still high in children aged 5–12 years(Aditianti et al., 2020; Briliannita et al., 2022; Hanifah et al., 2020) , while the Ministry of Health report (2013–2018) confirms that Indonesia faces the challenge of double nutrition, namely malnutrition and overnutrition. This condition indicates that students' understanding of balanced nutrition is a factor that is urgently needed to be researched and improved(Sahroji et al., 2022; Shao et al., 2017; Ulfah & Nugroho, 2020; Widyawati et al., 2024) .

However, the nutritional practices of children in the field are still far from ideal. Elementary school children should have a varied diet that meets their energy needs and is in line with the principles of the Balanced Nutrition Guidelines(Bachmida et al., 2025; Jerwin et al., 2020; Maritasari & Putri, 2021) . In reality, many children eat unhealthy breakfasts, consume junk food, or eat without vegetables. In fact, some are still influenced by old myths about inappropriate food portions. The gap between ideal practices and actual conditions shows that students' understanding of nutrition is still low and requires special attention.

This phenomenon opens up important opportunities for research on balanced nutrition knowledge among elementary school students. Through this research, schools can obtain a clear picture of their students' level of understanding of nutrition so that health education interventions can be carried out in a more targeted manner. In addition, this research also supports national programs to reduce the prevalence of stunting and increase awareness of healthy lifestyles from an early age, so that the results are relevant not only for students but also for the wider community.

Although a number of previous studies have proven the effectiveness of educational media, such as animated videos, in improving school children's nutritional knowledge, studies focusing specifically on rural elementary students are still limited (Chandradewi & Adiyasa, 2021; Fauziah et al., 2025; Suminar et al., n.d.; Triratnawati & Yuniati, 2023) . This study presents a novelty in the form of an analysis of balanced nutrition knowledge among elementary school students in Sampang Regency, an area known to have higher nutrition problems than urban areas. Thus, this study not only complements the existing literature but also adds an important local perspective to consider.

The selection of balanced nutrition knowledge variables was based on the consideration that knowledge is a fundamental factor that shapes children's eating attitudes and behaviors. The better their understanding, the greater the chance that children will apply healthy consumption patterns in their daily lives. Therefore, this variable is considered appropriate for describing students' initial condition in terms of nutrition awareness, as well as a basis for designing more effective educational intervention strategies in schools.

Based on the above description, this study aims to describe the level of balanced nutrition knowledge among fifth and sixth grade students at SDN Karang Dalem 1 Sampang. Theoretically, the results of this study are expected to enrich the knowledge base of health promotion, particularly in relation to nutrition education for primary school children. Meanwhile, in practical terms, this study can contribute recommendations for more applicable nutrition education interventions for schools, health workers, and policy makers, thereby supporting efforts to improve the health quality of future generations.



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## METHOD

### Research Design

This study uses a descriptive research design(Atmowardoyo, 2018; Doyle et al., 2020; Siedlecki, 2020) . This design was chosen to describe the level of balanced nutrition knowledge among elementary school students without conducting any intervention or special treatment. Descriptive research focuses only on one variable observed at a specific time, thus providing an objective picture of the students' knowledge.

### Participants

The research participants were fifth and sixth grade students at SDN Karang Dalem 1 Sampang. A total of 80 students participated in the study, consisting of all fifth and sixth grade students who were willing to participate in the study.

### Population and the Methods of Sampling, Instrumentation (sample of questions, scoring method, and psychometric properties)

The research population included all 80 fifth and sixth grade students at SDN Karang Dalem 1 Sampang. The sampling technique used total sampling, so that the entire population was used as the research sample. The data collection instrument was a questionnaire with 20 closed-ended questions of the dichotomous type (true-false). Scoring was done by giving a score of 1 for correct answers and 0 for incorrect answers. The scores were then categorized as follows:

- Good: 76%–100%
- Adequate: 56%–75%
- Poor: <56%

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The reliability of the instrument was based on previous testing and had been modified from similar studies, making it suitable for measuring students' knowledge of balanced nutrition.

### Instrument

The main research instrument was a questionnaire containing 20 questions about the definition, benefits, applications, and practices of balanced nutrition. This questionnaire was adapted from previous research (*Final Project: Overview of Knowledge of Balanced Nutrition Among Students at Tanjung Duren Utara 01 Pagi Elementary School, West Jakarta, 2020*) and has been adapted to the local context in Sampang.

### Procedures and, if relevant, the time frame

The research procedures included:

1. Submission of the title and research permit to the university and school.
2. Identification and collection of preliminary data on respondents.
3. Presentation of consent forms to students as research subjects.
4. Distribution of questionnaires and explanation of how to fill them out.
5. Respondents fill out the questionnaire according to the instructions.
6. Researchers check the completeness of responses, code the data, and process the results.

The research is conducted within a limited time frame during the even semester of the 2024/2025 academic year, in accordance with the approved research schedule.

### Analysis plan

The collected data were analyzed using descriptive statistics. The analysis was conducted by calculating the frequency distribution and percentage of respondents' answers. The results of data processing were presented in tables and narratives to describe the students' level of knowledge about balanced nutrition.



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## RESULTS AND DISCUSSION

### Result

Respondent Characteristics

This study involved 80 fifth and sixth grade students at SDN Karang Dalem 1 Sampang. Based on gender distribution, the number of male respondents was slightly higher than female respondents. In terms of age, most students were between 11 and 12 years old, which is consistent with the characteristics of late elementary school children.

Distribution of Knowledge on Balanced Nutrition

Based on the questionnaire results, students' knowledge of balanced nutrition was divided into three categories: good, adequate, and poor. The results showed that almost half of the respondents had adequate knowledge, some students had good knowledge, but there were still a small number of students who fell into the poor category.

**Table 1.1 Findings**

| Variable | Category | Frequency (n) | Percentage |
|---|---|---|---|
| Gender | Male | 31 | 39 |
| | Female | 49 | 61 |
| Age | 10 years | 4 | 5 |
| | 11 years | 55 | 69 |
| | 12 years | 21 | 26 |
| Nutrition Knowledge | Good (76–100%) | 31 | 39 |
| | Fair (56–75%) | 42 | 53 |
| | Poor (<56%) | 7 | 9 |
| Total Respondents | | 80 | 100 |

These results show that the majority of respondents were female (61%) and most were aged 11 years (69%). Students' knowledge of balanced nutrition was dominated by the adequate category (53%), while 39% had good knowledge, and 9% still had poor knowledge. These findings emphasize the need to improve nutrition education in schools so that children's knowledge is more evenly distributed and supports balanced nutrition practices in their daily lives.

### Discussion

The findings of this study indicate that most students' knowledge of balanced nutrition falls into the "adequate" category (53%), with 39% in the "good" category and 9% in the "poor" category. This result confirms that although a portion of students have understood the concept of balanced nutrition, a substantial group still lacks a comprehensive understanding. When compared with similar studies in urban areas of Indonesia, such as research in Jakarta and Surabaya, the percentage of students with "good" knowledge was reported to be higher, ranging from 55–65%(Diana Ariani, 2015; Lytle & Perry, 2001; Simelane & Worth, 2020) . This condition confirms that without effective educational intervention, students' understanding of nutrition will stagnate, potentially affecting their eating habits in the future. These findings are also consistent with research(Colombo et al., 2019; Liao & Deng, 2021; Saavedra & Prentice, 2023) that elementary school age is a "critical period" for shaping healthy eating behaviors. Therefore, more innovative and interactive nutrition education strategies are needed to improve students' knowledge from the "adequate" category to the "good" category, in line with the principles of behavioral nutrition that combine nutrition science with psychological and social factors.

Furthermore, this study makes a significant contribution by providing an up-to-date picture of the balanced nutrition knowledge of elementary school students in rural areas of Indonesia, particularly in Sampang Regency. These results expand on the international literature, which has



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previously focused more on urban populations or developed countries. According to the WHO, the current global nutrition challenge is dual nutrition, namely stunting and obesity, which mostly occur in developing countries(Gao et al., 2020; Muridzo Muonde et al., 2024; Popkin et al., 2020; Simelane & Worth, 2020) . Therefore, the findings from this study add an important local perspective to consider, especially in identifying groups of children with low nutritional knowledge who are at greater risk of experiencing nutritional problems.

However, this study has limitations because it only uses a descriptive design and was conducted in one school with a limited sample size (80 students). These limitations restrict the generalization of the research results to a wider population. In addition, the use of a questionnaire with true-false answers may not fully capture the depth of students' understanding of balanced nutrition. The instruments used were also not tested for validity and reliability separately in this study, even though they had been modified from previous studies, thus potentially affecting the accuracy of the results.

Based on these findings and limitations, several suggestions can be made. Schools need to strengthen nutrition education programs by using more engaging learning media, such as animated videos or project-based methods, as recommended by UNICEF in child health education( Oktadewi, 2018;  Wardania & Utomo, 2022; Widuri et al., 2023) . Further research is recommended using an experimental design to test the effectiveness of nutrition education interventions in a more measurable way. Additionally, local governments and school health workers are expected to play a more active role in organizing balanced nutrition awareness campaigns through the UKS (School Health Efforts) program. Further studies with larger samples and involving other variables such as attitudes and consumption behaviors are also important to provide a more comprehensive picture of balanced nutrition knowledge among elementary school-aged children.



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## CONCLUSION

This study shows that the knowledge of balanced nutrition among fifth and sixth graders at SDN Karang Dalem 1 Sampang is mostly in the adequate category (53%), while some students already have good knowledge (39%), and a small number are still in the inadequate category (9%). This distribution is also influenced by the characteristics of the respondents, where the majority are female and 11 years old. These findings show that although some students already understand the basic concepts of balanced nutrition, there are still groups that need to improve their understanding in order to consistently apply healthy eating patterns.

Based on the results and discussion, it can be concluded that the level of balanced nutrition knowledge among elementary school students in rural areas such as Sampang still needs to be improved through more innovative and interactive educational interventions. This study contributes to providing a local picture of the nutritional knowledge of elementary school children and can serve as a basis for schools, health workers, and policymakers to design more effective nutrition education programs. Thus, this study supports efforts to improve children's health and prevent double nutrition problems in Indonesia.

## AUTHOR CONTRIBUTION STATEMENT

A.R.W. contributed to the research design and conceptual framework. N.D.R. was responsible for data collection, analysis, and interpretation of research results. R.A. contributed to the literature review, discussion, and final manuscript revision. All authors read and approved the final manuscript for publication.



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