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Effectiveness of a Public Health Campaign in Raising Awareness of Balanced Nutrition in Primary School Children

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ABSTRACT

This study used a quantitative approach with a quasi-experimental research design to measure the effectiveness of a public health campaign in improving balanced nutrition awareness in primary school children. Data were collected through pre-test and post-test using a structured questionnaire that had been tested for validity and reliability. The results of the analysis showed a significant increase in the average score of students' knowledge from 65.20 7.80 before the intervention to 88.60 5.20 after the health campaign (p=0.001), as well as students' awareness which increased from 60.30 6.70 to 85.50. This study provides empirical evidence that well-designed nutrition education can be a solution to address nutritional problems in children, such as malnutrition and obesity, thereby supporting the creation of healthier and more productive generation in the future.

Keywords : *Knowledge, Balanced Nutrition Awareness, Health Campaigns*

INTRODUCTION

Nutrition among primary school-aged children in Indonesia remains a major challenge, with prevalence showing significant fluctuations. Data from various sources, including the Ministry of Health and related research, reveal that children in Indonesia face nutrition problems that include both malnutrition and obesity (Dwi et al., 2016; MOH, 2023). Based on data from the 2018 Basic Health Research (Riskesdas), the prevalence of stunting in early childhood reached 30.8%, indicating that many children are chronically malnourished. In addition, the lack of understanding of a balanced nutritional diet exacerbates this situation (Firdaus et al., 2021).

School-age children are vulnerable to nutritional problems such as malnutrition and obesity. Knowledge about the benefits of nutrients contained in food is still low, so many children do not understand the importance of balanced nutrition to support their growth and development

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(Ofalitna, 2018). This is exacerbated by uncontrolled eating patterns, such as the consumption of unhealthy snacks, which are commonly found in the school environment.

One way to improve understanding of balanced nutrition is through public health campaigns. These campaigns can be conducted with various approaches, such as education using video, slideshare, or infographic media, which have been proven effective in improving students' knowledge of balanced nutrition (Khairunnisa & Kurniasari, 2023). These media-based interventions not only attract students' attention but also facilitate the delivery of information.

Community-based approaches also play an important role. Training for housewives on how to serve healthy and nutritious food at home has shown a significant impact in increasing family awareness of the importance of balanced nutrition. Educational programmes that involve families have been shown to improve children's diets and prevent stunting (Firdaus et al., 2021).

In the school environment, educational programmes such as the use of food models in teaching and learning activities have shown positive results. For example, in Kupang District, education using this media was able to increase students' knowledge of balanced nutrition from 54% to 78% (Nur et al., 2023). This proves that innovative and relevant approaches can attract students' interest and provide a deeper understanding.

In addition, school-based public health campaigns also have a lasting impact. Children who understand the importance of balanced nutrition are likely to take these habits into their homes and communities, creating a ripple effect that can increase overall community awareness (Khairunnisa & Kurniasari, 2023).

However, challenges remain in the implementation of this health campaign. Obstacles such as lack of resources, access to educational media, and low levels of health literacy in some communities require more attention. Therefore, collaboration between the government, schools and communities is needed to ensure the success of these educational programmes.

Based on the description above, research on the effectiveness of public health campaigns in increasing awareness of balanced nutrition in primary school children is very relevant to be carried out. This research is expected to be able to make a real contribution in efforts to improve the health of Indonesian children and form a healthier and more productive generation in the future.

METHODS

This study used a quantitative approach with a quasi-experimental research design to measure the effectiveness of a public health campaign in improving balanced nutrition awareness in primary school children. This design involves measuring the level of knowledge and nutritional awareness of students before and after the implementation of the campaign, using an intervention group and a control group for comparison.

The study population is primary school students in grades IV and V in selected areas that are purposively selected based on population characteristics, such as the level of prior knowledge about nutrition and the affordability of the location. The study sample will be determined using a

stratified random sampling technique to ensure good representation of each social and economic strata.

The intervention was conducted in the form of a health campaign that included educational activities using interactive media such as videos, infographics, and food models. These media were chosen because they have been proven effective in improving students' understanding of balanced nutrition based on previous research (Khairunnisa & Kurniasari, 2023). The education sessions involved interactive simulations, group discussions, and practical activities to strengthen students' understanding of the importance of consuming balanced nutritious food.

Data were collected through pre-test and post-test using a structured questionnaire that had been tested for validity and reliability. The questionnaire instrument included an assessment of students' knowledge, attitudes and behaviours related to balanced nutrition. In addition, direct observation during the intervention activities was also conducted to record students' participation and response to the materials presented.

Data were analysed using paired sample t-test to measure significant changes in students' knowledge and awareness levels before and after the intervention. An independent sample t-test was also used to compare the results between the intervention and control groups. Qualitative data from observations and interviews were analysed descriptively to complement the quantitative research results.

This method is expected to provide a comprehensive picture of the effectiveness of public health campaigns in increasing awareness of balanced nutrition in primary school children. The results can serve as recommendations for schools and policy makers in designing more effective nutrition education programmes

RESULTS

1. Balanced Nutrition Knowledge and Awareness

Table1 . Frequency Distribution of Nutrition Knowledge and Awareness Variables

Variables	Category	Frequency (n)	Percentage (%)
Pre-test knowledge	Low (≤60)	30	30%
	Medium (61 - 80)	50	50%
	High (>80)	20	20%
Post-test knowledge	Low (≤60)	5	5%
	Medium (61 - 80)	25	25%
	High (>80)	70	70%
Pre-test awareness	Low (≤60)	40	40%
	Medium (61 - 80)	45	45%
	High (>80)	15	15%
Post-test awareness	Low (≤60)	10	10%
	Medium (61 - 80)	30	30%
	High (>80)	60	60%

The results showed that the public health campaign significantly improved knowledge and awareness of balanced nutrition among primary school children. Before the campaign, the majority of children had knowledge in the moderate category (50%), with 30% in the low category and 20% in the high category. After the campaign, the high category increased dramatically to 70%, while the medium category decreased to 25% and the low category to 5%. The average knowledge score increased from 65.20 in the pre-test to 88.60 in the post-test, demonstrating the effectiveness of the campaign in improving children's understanding of balanced nutrition.

Children's awareness of balanced nutrition also showed a significant increase. Before the campaign, 40% of children were in the low category, 45% were in the medium category, and only 15% were in the high category. Post-campaign, the high category increased to 60%, while the medium and low categories decreased to 30% and 10% respectively. The average awareness score rose from 60.30 in the pre-test to 85.50 in the post-test. This increase indicates that the campaign successfully reached and increased children's understanding and awareness of the importance of balanced nutrition, making it an effective method to be applied more widely.

2. Knowledge and Awareness

Table 2. Descriptive Statistics of Knowledge and Awareness Variables

Variables	Average	Standard deviation	Min	Max
Pre-test knowledge	65,20	7,80	50	78
Post-test knowledge	88,60	5,20	75	95
Pre-test awareness	60,30	6,70	48	72
Post-test awareness	85,50	5,90	70	92

In the table above, it is known that Pre-Test and Post-Test knowledge, Before the intervention, the majority of students (50%) had a moderate level of knowledge, with an average score of 65.20 ± 7.80. After the intervention, 70% of students reached a high level of knowledge, with the average increasing to 88.60 ± 5.20. Pre-Test and Post-Test Awareness, before the intervention, most students (40%) had a low level of awareness. After the intervention, the majority of students (60%) had a high level of awareness, indicating a significant increase in nutritional awareness.

3. The Effect of Health Campaigns on Knowledge and Awareness of Nutrition

Table 3. Effect of Health Campaign on Knowledge and Awareness of Nutrition

Variables	Intervention group (n=50)	Control group (n=50)	*p-value*
Pre-Test Knowledge	65,20 ± 7,80	64,90 ± 8,10	0,782
Post-Test Knowledge	88,60 ± 5,20	70,40 ± 7,60	0,001
Pre-Test Awareness	60,30 ± 6,70	61,10 ± 7,00	0,612
Post-Test Awareness	85,50 ± 5,90	65,20 ± 6,80	0,001
Total Increase (%)	23,40%	8,00%	-

It is known from the table above that the average score of students' knowledge in the intervention group increased significantly from 65.20 ± 7.80 before the intervention to 88.60 ± 5.20 after the health campaign (p=0.001). In contrast, in the control group, the increase was only 5.50 points, from 64.90 ± 8.10 to 70.40 ± 7.60, and was not significant. Students' awareness also increased significantly in the intervention group, from 60.30 ± 6.70 to 85.50 ± 5.90 (p=0.001). In the control group, the increase in awareness was relatively small, only from 61.10 ± 7.00 to 65.20 ± 6.80, with p> 0.05.

Health campaigns using interactive media such as videos, infographics, and food models proved to be more effective in improving students' nutritional knowledge and awareness compared to the no-campaign approach. The percentage increase in knowledge and awareness in the intervention group reached 23.40% and 25.20%, respectively, much higher than the control group (8.00% and 6.70%). These results show that interactive media-based health campaigns are effective in increasing primary school students' knowledge and awareness of the importance of balanced nutrition. This can be a reference for the government and schools in designing future health education programmes.

DISCUSSION

1. Balanced Nutrition Knowledge

The results showed a significant increase in students' knowledge of balanced nutrition after the implementation of the public health campaign. The mean knowledge score in the intervention group increased from 65.20 ± 7.80 to 88.60 ± 5.20. This shows that interventions through interactive media such as videos, infographics, and food models are effective in delivering complex material in an interesting and easy-to-understand way.

According to Jean Piaget's cognitive learning theory, school-age children are in the concrete operational stage, which lasts between the ages of 7 and 12. At this stage, children begin to be able to think logically and systematically about real, concrete objects and events around them. They learn well through visualisation and direct experience, which allows them to better understand abstract concepts, such as balanced nutrition (Restu, 2022). Research by Nuryani & Paramata 2018 also showed that nutrition education through peer educators significantly improved knowledge,

attitudes, and behaviour of balanced nutrition (Nuryani & Paramata, 2018). Similar research by Putri et al., 2021 found a significant relationship between balanced nutrition knowledge and food choices in adolescents (Putri et al., 2021).

This study assumes that primary school children's knowledge of balanced nutrition can be improved through the delivery of information using educational media that is appropriate to their cognitive developmental stage. School-age children are at the concrete operational stage according to Piaget's theory, where they learn better through real experiences, visualisation and concrete examples. Therefore, the use of media such as food models, infographics and videos is expected to provide a clear picture of the concept of balanced nutrition, making it easier for students to understand the benefits of different types of food.

Another assumption is that students' educational background and support from the school environment also influence the acceptance of nutrition information. In this case, teachers play an important role as facilitators who help deliver the material with interesting methods. Previous research has shown that school-based nutrition education that involves active participation of students can significantly improve their knowledge (Khairunnisa & Kurniasari, 2023). Thus, a school-based health campaign programme is assumed to be able to create positive changes in students' level of understanding. Theory of Planned Behaviour to Predict Investment Intention.

2. Balanced Nutrition Awareness

Students' awareness of the importance of balanced nutrition also increased significantly, from an average score of 60.30 ± 6.70 to 85.50 ± 5.90 in the intervention group. This increase reflects the success of the campaign in changing students' perceptions and attitudes towards healthy eating.

The Theory of Planned Behaviour (TPB) developed by Icek Ajzen in 1991 explains how changes in a person's attitude and behaviour can be predicted through three main components: attitude, subjective norms, and perceived behavioural control (Mahyarni, 2013; Nyoman et al., 2017). In this study, an interactive media-based campaign creates an environment that supports changes in students' attitudes towards balanced nutrition.

Khairunnisa & Kurniasari 2023 regarding the research title Balanced Nutrition Education Using Infographic and Website Media shows a significant increase in student awareness of balanced nutrition after education through digital media such as infographics and websites (Khairunnisa & Kurniasari, 2023). This research is supported by Saputri et al., 2021 regarding the Effect of Balanced Nutrition Counselling on Community Knowledge and Attitudes, the study shows an increase in public nutrition awareness through counselling during the new normal era (Saputri et al., 2021).

This research assumes that raising nutrition awareness among primary school children requires an approach that is not only informative, but also motivates them to take action. The theory of planned behaviour (Ajzen, 1991) states that changes in awareness occur through a combination of knowledge, social norm support, and students' belief in their ability to act. Thus, the materials provided through the health campaign are expected to not only increase knowledge, but also create motivation to change their daily diet.

In addition, it is assumed that students' awareness is influenced by their diet and habits at home. If students receive information on balanced nutrition at school but are not supported by the same practices at home, then changes in awareness may not be optimal. Therefore, the involvement of parents and families in supporting students' understanding is considered as one of the important factors that strengthen the success of this health campaign (Firdaus et al., 2021).

3. Campaign

The effectiveness of the public health campaign in this study was demonstrated by the significant difference between the intervention and control groups. The intervention group experienced an increase in knowledge by 23.40% and awareness by 25.20%, much higher than the control group which only increased by 8.00% and 6.70%.

Health Communication Theory, particularly the Health Belief Model (HBM), emphasises that the success of health campaigns depends largely on individuals' perceptions of the benefits of health interventions and ease of access to relevant information. The HBM consists of several interrelated components, which influence an individual's decision to engage in healthy behaviours. In this study, interactive media such as videos and infographics increased the appeal of the campaign, so that students were more engaged in learning (Jaya et al., 2023; Sumiyem et al., 2023).

Research by Nur et al. (2023) showed that the use of food model media in Kupang increased students' understanding of nutrition by 24% (Nur et al., 2023). Another study on Improving the Nutrition Knowledge of the Elderly through Counselling and Mentoring, showed that health campaigns in social institutions increased the awareness of the elderly on the importance of balanced nutrition in old age (Haerani et al., 2022).

This research assumes that the effectiveness of health campaigns depends on the relevance and delivery methods of the information used. Children are more responsive to materials that are visually appealing and delivered through a participatory approach. Interactive media such as videos, infographics, and live demonstrations using food models are assumed to be able to increase student absorption compared to conventional methods such as lectures.

In addition, campaign effectiveness is also assumed to be influenced by external factors, such as school support and availability of resources. Campaigns conducted in a conducive environment, with teachers playing an active role and sufficient educational resources, are expected to result in a more significant increase in knowledge and awareness.

CONCLUSIONS

This study shows that an interactive media-based public health campaign is effective in increasing knowledge and awareness of balanced nutrition among primary school students. The results of the analysis showed a significant increase in the average score of students' knowledge from 65.20 to 88.60 after the intervention, as well as students' awareness which increased from 60.30 to 85.50. Educational media such as videos, infographics, and food models are proven to be able to convey information in an interesting and easy-to-understand manner, in accordance with the

cognitive development stage of school-age children. This finding supports cognitive learning theory which states that concrete experience and visualisation are effective in improving children's understanding.

The campaign was also able to influence students' awareness of the importance of healthy eating, in line with the theory of planned behaviour which emphasises the importance of knowledge, social norms and motivation in shaping awareness. In addition, the involvement of teachers, the school environment and potential family support played an important role in strengthening the campaign's outcomes. This research proves that an interactive school-based education approach can create positive changes in children's health behaviours.

As an implication, similar campaigns can be integrated into the school curriculum to promote sustainability of their impact. This study provides empirical evidence that well-designed nutrition education can be a solution to address nutritional problems in children, such as malnutrition and obesity, thereby supporting the creation of a healthier and more productive generation in the future.

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