

THE EFFECT OF BALANCED NUTRITION COUNSELING USING ANIMATED VIDEOS ON KNOWLEDGE AND ATTITUDES OF STUDENTS AT PUCANG 1 SIDOARJO

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ABSTRACT

The lack of knowledge about balanced nutrition is a factor in malnutrition among school-aged children. About 32.3% of elementary school children in East Jawa, Indonesia, experience malnutrition, including those at Pucang 1 Sidoarjo. Efforts to handle this issue can be made through counseling using animated videos. This study aimed to determine the effect of balanced nutrition counseling through an animated video on students' knowledge and attitudes at Pucang 1 Sidoarjo. This study involved 27 fifth-grader respondents who were recruited using a purposive sampling technique. This type of research is pre-experimental with a one-group pretest-posttest design. This study was conducted in August 2023. Data were analyzed using the Paired Sample T-Test and Wilcoxon Rank Test. The counseling significantly affected students' knowledge ($p=0.000$) and attitudes ($p=0.000$). The average knowledge score of students increased from 59.81 ± 13.48 to 79.63 ± 11.92 after the counseling. The average attitude score of students also increased from 79.66 ± 4.72 to 85.37 ± 7 after the counseling. Counseling on balanced nutrition using animated videos effectively improves the knowledge and attitudes of fifth-grade students at Pucang 1 Sidoarjo.

Keywords: balanced nutrition, counseling, knowledge, attitudes, animated video

INTRODUCTION

Children are the nation's greatest assets because they shape their future. To build a high-quality generation, we must meet their nutritional needs during critical growth periods, particularly in elementary schools. School-aged children are in a crucial growth phase, during which adequate nutritional intake is essential to support physical development and prevent future health problems (Tamrin et al., 2023).

Despite the known benefits of balanced nutrition, many children's food choices undermine it. For instance, elementary students often favor high-fat, flavorful snacks but low in nutritional value (Afrinis et al, 2021). Students spend most of their days at school, where unhealthy snacks are easy to find and buy (Al Rahmad, 2019). However, these foods are usually high in fat and low in calcium, fiber, and iron (Sari & Rachmawati, 2020). This can affect the nutritional status and increase the risk of malnutrition-related health issues.

Malnutrition is a common problem among schoolchildren and includes both

undernutrition and overnutrition (Fitri et al., 2020). Undernutrition can manifest as marasmus, kwashiorkor, and marasmic-kwashiorkor, whereas overnutrition is associated with obesity (Perdana et al., 2020).

Riskesdas 2018 data showed that the national prevalence of severe malnutrition in children aged 5-12 years is 2.4%, undernutrition is 6.8%, overnutrition is 10.8%, and obesity is 9.2%. In East Java, the 2018 Riskesdas data indicate that the prevalence of severe malnutrition is 2.2%, undernutrition is 5.8%, overnutrition is 13.2%, and obesity is 11.1% (Kemenkes, 2018). A preliminary survey conducted at Pucang 1 Sidoarjo found that out of 104 fifth-grade students, 39 experienced malnutrition: 1% severe malnutrition, 4.8% undernutrition, 26% overnutrition, and 7% obesity.

According to Suhardjo (2005) in Syakir (2018), a lack of knowledge about balanced nutrition among students may be one of the causes of these problems. Counseling is an effort to change knowledge and attitudes regarding food consumption, and is considered a part of nutrition

education. Nutrition education can improve students' knowledge and change their attitude (Fitri et al, 2020). An effective medium for nutrition education for schoolchildren is animated videos, as they are more easily received through both sight and hearing, the two primary senses through which most human knowledge is acquired. Febriani et al. (2019) showed that nutritional information delivered via animated videos improved children's knowledge and attitudes. This method of information transfer enhances cognitive understanding, enabling respondents to answer questionnaire questions more accurately and resulting in changes in knowledge and attitudes.

This study aimed to evaluate the effectiveness of animated video-based nutrition counseling in improving the knowledge and attitudes of fifth-grade students at SDN Pucang 1 Sidoarjo.

METHODS

This was a pre-experimental study with a *One-Group Pretest-Posttest Design*. This involves one group determining the differences in students' knowledge and attitudes before and after an intervention using animated videos about Balanced Nutrition. The study was conducted over three sessions at Pucang 1 Sidoarjo, East Java, in August, 2023.

The study population consisted of 101 fifth-grade students at Pucang 1 Sidoarjo. The sample was selected using purposive sampling, resulting in 27 fifth-grade students meeting the inclusion and exclusion criteria. The inclusion criterion was fifth-grade students at Pucang 1 Sidoarjo in East Java. The exclusion criteria were students who were unwilling to participate and those who did not fully participate, such as those who were absent or sick during the study. Participant recruitment was voluntary. All participants signed an informed consent form before participating in the study. This study was conducted in accordance with the Declaration of Helsinki and Indonesian Regulations on Human Subject Research. Ethical approval was obtained from the Health Research Ethics Commission of Politeknik Kesehatan Kementerian Kesehatan Malang (no. DP.04.03/F.XXI.31/966/2023). Prior to data collection, formal

permission was secured from the principal of SDN Pucang 1 Sidoarjo. To ensure confidentiality, all data were coded and anonymized prior to analysis.

The research instruments were pre-post test questionnaires on students' knowledge and attitudes. Data were directly obtained from the respondents, including their identity (name, age, gender, weight, and height), knowledge, attitudes, and nutritional status. According to Arikunto (2010) and Yulastika and Amirulah (2023), knowledge was measured using a questionnaire containing 20 multiple-choice questions (a, b, c, d). The knowledge score was determined by awarding one point for each correct answer and zero points for incorrect answers.

According to Arikunto (2010) in Kondo dkk (2020), attitudes were measured with a questionnaire and processed using Microsoft Excel. The respondents' answers were scored as follows: positive statements (agree = 3, unsure = 2, disagree = 1) and negative statements (agree = 1, unsure = 2, disagree = 3). The knowledge and attitude categories based on percentage scores were good (≥ 75), fair (56-74), and poor (< 55).

Nutritional status was measured using the WHO Anthro Plus application by inputting data on weight, height, and age. The z-score was calculated based on the BMI/U index and compared with the Ministerial Regulation of Health of the Republic of Indonesia Number 2 Year 2020 standards, categorized as severely thinned ($< -3SD$), thin ($-3SD$ to $< -2SD$), normal ($-2SD$ to $+1SD$), overweight (1 SD to 2 SD), and obese ($> +2SD$).

The knowledge and attitudes of students before and after counseling using animated videos were tested for normality using the *Shapiro-Wilk test*. If the data were normally distributed, a *Paired Sample T-Test* was conducted. However, if the data were not normally distributed, the *Wilcoxon Rank Test* was used with a 95% confidence level. Conclusion: H_0 is accepted if $p > 0.05$, meaning that there was no difference before and after counseling. H_1 was accepted if $p < 0.05$, indicating that there was a difference before and after counseling.

RESULT AND DISCUSSIONS

Characteristics of respondents by gender, age, and nutritional status

Table 1 summarizes the characteristics of the 27 respondents according to sex, age, and nutritional status. As shown in Table 1. Fourteen (51.9%) patients were male and 13 (48.1%) were female. Most respondents were 11 years old (81.5%), while the remainder were 10 years old (18.5%). Regarding the BMI-for-age category set by the Ministerial Regulation of Health of the Republic of Indonesia Number 2 Year 2020, most respondents had normal nutritional status (74.1%), followed by overweight (18.5%), obese (3.7%), and underweight (3.7%), with no respondents being malnourished.

Adolescence is the transition period from childhood to adulthood and is characterized by behaviors such as restlessness, defiance, and desire to try new things due to a high level of curiosity (Syalis & Nurwati, 2020). This attitude is reflected in their eating habits, where adolescents prefer savory and strongly flavored foods such as snacks because they are considered more delicious (Afrinis et al., 2021). Easy access to such foods at school further supports this habit, although consuming high-fat, low-calcium, fiber, and iron can negatively affect their nutritional status (Al Rahmad, 2019).

Age also influences cognitive abilities and thinking patterns. As individuals grow older, their understanding of information improves, leading

to improved knowledge acquisition. However, the lack of knowledge among adolescents often results in unhealthy eating habits, such as consuming strongly flavored foods, which can affect their nutritional status.

An imbalance between food intake and physical activity affects the nutritional status. Excessive food consumption without physical activity can lead to overweight and obesity, whereas inadequate food intake combined with heavy physical activity can result in malnutrition. Soekirman (2006) in Yanti et al. (2021) stated that obesity is caused by excessive energy intake, while Nugroho et al. (2016) in Yanti et al. (2021) added that lack of physical activity increases fat accumulation.

Low nutritional knowledge is one of the causes of nutritional problems and changes in eating habits among elementary schoolchildren. Nutritional knowledge includes information about healthy foods, sources of nutrients, and clean and healthy living behaviors. According to Pakar Gizi Indonesia (2017) and Yanti et al. (2021), a lack of balanced nutrition leads children to choose foods based on taste, social status, and trends.

Students Knowledge Before and After the Counseling

Figure 1 illustrates the distribution of the respondents' knowledge scores before and after -video counseling. As seen, 24 out of the 27 students improved their scores after the -intervention. Three respondents (R3, R14, and R15) had the same scores as before the counselling session. The respondent with the highest score before counseling was R11 (95) and the lowest was R24 (30). After counseling, the highest scores

Table 1. Characteristics of Respondents by Gender, Age and Nutritional Status

Characteristics	Frequency (n=27)	Percentage (%)
Gender		
Male	14	51,9
Female	13	48,1
Age (Years)		
10	5	18,5
11	22	81,5
Nutritional Status		
Severely thinnes	0	0
Thinnes	1	3,7
Normal	20	74,1
Overweight	5	18,5
Obese	1	3,7

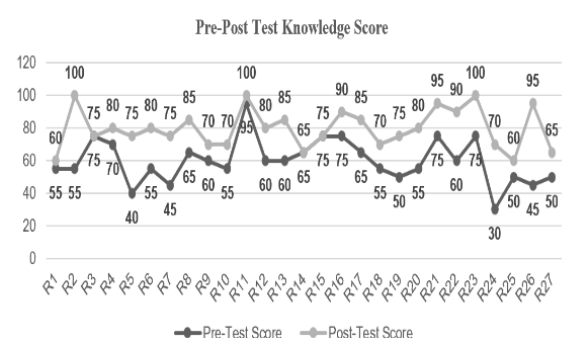


Figure 1. Distribution of Respondents by Knowledge Score

were obtained for R2, R11, and R23 (100), and the lowest scores were obtained for R1 and R25 (60).

Table 2 shows that after counseling, the number of respondents with a “good” knowledge level increased from 6 (22.22%) to 19 (70.37%). The number of respondents with “poor” knowledge decreased from 13 (48.15%) to 0, while respondents with “fair” knowledge remained the same at 8 (29.63%).

Table 3 shows that the average pre-counseling knowledge score was 59.81 ± 13.48 , falling into the fair knowledge category, with a minimum score of 30 and a maximum of 95. After counseling, the average score increased to 79.63 ± 11.92 , falling into the good knowledge category, with a minimum score of 60 and a maximum of 100. The *Paired Sample T-Test* statistical analysis at a 95% confidence level indicates a significant effect ($p=0.000$), indicating increased knowledge after counseling.

According to Mahmudah (2019), knowledge results from sensing an object through senses. The more senses used, the higher is the level of information absorption, which increases a person’s knowledge. Notoatmodjo (2010) added that knowledge is obtained through the senses and is influenced by the attention and perception of the object. Knowledge can be acquired from experience, mass media, electronics, books, healthcare workers, posters, and close relatives (Arinta, 2021).

The score increase among the 24 respondents was due to counseling using animated videos.

Table 2. Distribution of Respondents by Knowledge Level

Knowledge Category	Before (n=27)		After (n=27)	
	n	%	n	%
Good	6	22,22	19	70,37
Fair	8	29,63	8	29,63
Poor	13	48,15	0	0

Table 3. Descriptive Statistics of Respondents’ Knowledge

Variable	Mean	SD	Min	Max	p-value
Pre Test	59,81	13,48	30	95	0,000*
Post Test	79,63	11,92	60	100	

^aPaired Sample T-Test ; *Signifikan $p < 0,05$

According to Fitri et al. (2020), regular counseling effectively increases children’s knowledge and changes their attitudes. Johari (2014) in Apriansyah (2020) adds that animated videos aid understanding because they involve two human sensory sensors, the eyes, and ears, with people able to remember 50% of what they see and hear.

The three respondents who did not experience a score change may have been influenced by factors such as education, age, and experience. According to Nursalam (2009) and Arinta (2021), higher education levels make it easier to receive information, resulting in better knowledge. The respondents were elementary school students with a lower education level, making it difficult for them to absorb new information (Nugroho and Sari, 2019). Age can influence comprehension and thinking patterns. Thinking patterns can be affected by daily habits, such as children who tend to choose savory snacks that are easily available at school (Afrinis et al, 2021). This leads to a tendency to answer questionnaires based on ingrained eating habits that may be unhealthy. Previous learning experiences from counseling sessions are also meaningful; however, students at Pucang 1 Sidoarjo have yet to receive counseling on balanced nutrition. This also contributes to the lack of understanding of balanced nutrition.

The test results showed a significant effect ($p=0.000$) of increased knowledge after counseling. This is consistent with previous research revealing that animated video media effectively increase nutritional knowledge (Tamrin et al., 2023; Syakir, 2018). This medium is attractive because it facilitates the learning process in an interactive and easily understood manner by students by utilizing the advantages of human sensory use to strengthen the learning effect. The knowledge gained from this counseling program has the potential to influence students’ eating behaviors, which in turn can affect their nutritional status. This is crucial considering the importance of proper food choices in preventing malnutrition.

Students Attitudes Before and After the Counseling

Figure 2 shows that out of the 27 respondents, 24 experienced an increase in post-test attitude scores, while three respondents (R1, R3, and R18)

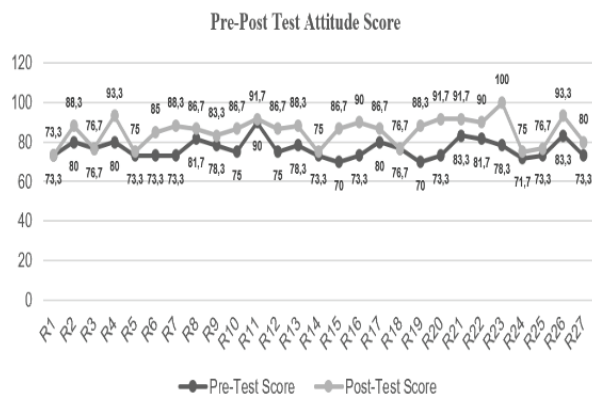


Figure 2. Distribution of Respondents by Attitude Score.

maintained their attitude scores. Before counseling, respondent 11 (90) had the highest attitude score, while the lowest was held by respondents 15 and 19 (70). After counseling, respondent 23 achieved the highest score (100), whereas respondent 1 had the lowest score (73.3).

Table 4 shows the attitudes of respondents before and after counseling. Before counseling, 15 respondents (55.6%) had a good attitude, increasing to 26 (96.3%) after counseling. Meanwhile, the fair attitude category decreased from 12 (44.4%) to one (3.7%) after counseling. There were no respondents in the poor attitude category before or after counseling.

Table 5 presents the descriptive statistics of the respondents' attitude scores. The respondents' average attitude score was 76.66 ± 4.72 , with a minimum score of 70 and a maximum score of 90, indicating a good level of attitude. After counseling, there was a significant increase in the average score to 85.37 ± 7 , with a minimum score of 73.3 and a maximum score of 100. Statistical analysis of respondents' attitudes used the *Wilcoxon Rank Test* because the data were not normally distributed ($p < 0.05$). The statistical test results showed a significant effect ($p = 0.000$),

Table 4. Distribution of Respondents by Attitude Level

Attitude Category	Before (n=27)		After (n=27)	
	n	%	n	%
Good	15	55,6	26	96,3
Fair	12	44,4	1	3,7
Poor	0	0	0	0

Table 5. Descriptive Statistics of Respondents' Attitudes

Variable	Mean	SD	Min	Max	p-value
Pre Test	76,66	4,72	70	90	0,000 ^{b*}
Post Test	85,37	7	73,3	100	

^b *wilcoxon Rank Test* ; *Signifikan $p < 0,05$

indicating an improvement in attitudes after counseling.

Attitudes reflect a person's feelings, whether happy, like, dislike, agree, or disagree with an object (Ma'arif, 2019). According to Notoatmodjo (2010), attitude is a closed response to an object involving opinions and emotions (happy-unhappy, agree-disagree, good-bad, etc.). Attitude only sometimes manifests in actions, as it requires other factors such as facilities and infrastructure. Rahmayani (2018) added that attitude is a person's readiness to act without a specific motive.

The increase in the attitude scores among the 24 respondents was mainly due to their increased knowledge. Knowledge makes a person think where, in this case, emotional and belief components are also involved, resulting in the intention to act positively or negatively (Notoatmodjo, 2010). According to Sari et al. (2012) and Putri et al. (2021), better knowledge leads to more positive attitudes. Using animated videos in counseling also influences positive attitude changes in respondents because this medium helps in understanding and remembering information more effectively through visual and auditory senses (Azwar, 2010; Syakir, 2018).

However, some students maintained identical attitude scores after counseling, which could be attributed to experiential factors. As expressed by Sari (2016) and Putri et al. (2021), attitudes can be learned and formed through life experiences. Previous learning experiences from counseling sessions are significant; however, students at Pucang 1 Sidoarjo have yet to receive counseling on balanced nutrition. This causes respondents to need a better understanding of balanced nutrition, thus requiring time and the right approach tailored to each student's needs to change all students' attitudes towards the better.

Statistical test results showed a significant effect ($p = 0.000$), indicating improved attitudes after counseling. His study aligns with Syakir

(2018), especially regarding nutritional counseling using animation media, which showed a positive effect on adolescent girls' attitudes toward anemia ($p = 0.001$). Similarly, a previous study by Wiradona et al. (2022) on dental caries in elementary school children using animated video media showed improved attitudes after counseling ($p = 0.000$). These results indicate that animation media improve respondents' attitudes towards nutritional topics.

Attitude, as an expression of feelings towards an object, can be influenced by personal experiences, the influence of others, and the mass media (Suryani, 2019). Animation media were chosen because they can reach two human senses, vision and hearing, allowing for a more effective learning process (Aroni, 2022). In this context, an increase in respondents' knowledge about balanced nutrition positively affects their attitudes, making them more prepared to apply this in their daily lives (Rahmayani, 2018). Thus, the results of this study show that counseling using animated video media effectively improves positive attitudes toward balanced nutrition among fifth-grade students at Pucang 1 Sidoarjo.

CONCLUSION AND SUGGESTION

Counseling significantly affected the students' knowledge and attitudes. These findings demonstrate that animated educational media are a practical and engaging tool for enhancing nutrition literacy at the elementary school level.

This approach may serve as a complementary component to national initiatives such as the Makanan Bergizi Gratis (MBG) programme. While MBG primarily focuses on improving nutritional intake through food provision, the inclusion of animated video-based nutrition education within the school curriculum offers an opportunity to strengthen students' understanding and awareness, encouraging healthier food choices and long-term behavior change.

The integration of this educational component into thematic learning modules or extracurricular health sessions aligns with the principles of Kurikulum Merdeka, which emphasize contextual, interactive, and student-centered learning. The results of this study also support the development of scalable, cost-effective, and impactful

educational media for wider implementation across Indonesian schools, contributing to national efforts aimed at reducing malnutrition and improving health outcomes in school-aged children.

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