

HEALTH EDUCATION VIA AUDIOVISUAL MEDIA TO IMPROVE STUDENTS' FOOD SAFETY KNOWLEDGE

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ABSTRACT

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Background: Food safety is very important for every food consumed, including School Children's Snacks (PJAS). Students' awareness in choosing safe, healthy, and hygienic snacks is still low due to a lack of knowledge. One way to increase this awareness is through health education using audiovisual media (films). The purpose of this study was to determine the effect of health education through audiovisual media on improving students' knowledge of food safety. Method: The research design used in this study was quantitative pre-experimental using a one group pre-post test design research method. The population in this study was all 1,514 tenth grade students at vocational high schools in Tuban Regency, with a sample selected using cluster random sampling, resulting in a sample of 307 students. Result: The results of the study, analyzed using the Wilcoxon test with a significance level of $\alpha < 0.05$, proved to increase food safety knowledge with a value of $p = 0.000 < 0.05$, which means that H_1 is accepted, namely that there is an effect of health education through audiovisual media (films) on students' knowledge of food safety. Conclusion : Health education through audiovisual media (films) has an impact on students' knowledge of food safety in school canteens in vocational high schools throughout Tuban Regency because this medium is more interesting, easy to understand, and able to improve students' memory.

1. INTRODUCTION

Food safety is an important aspect of maintaining public health, especially among school-aged children. Unsafe food can transmit various diseases, such as diarrhea, food poisoning, and parasitic and bacterial infections¹. School children often eat snacks from the cafeteria because they are convenient and easily

accessible, but these snacks may contain harmful substances or fail to meet hygiene standards².

Food safety is not only the responsibility of food handlers, but also requires consumers to be prepared to deal with the risk of dangerous food circulating³. Consumers need to understand the difference between safe and hygienic foods and be more discerning in choosing healthy

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snacks. However, students' awareness of this issue remains low due to limited knowledge. In fact, knowledge plays a role in shaping attitudes and behaviors in choosing snacks that impact nutrition and health. With good knowledge, students can be guided to have positive behaviors in choosing safe and hygienic snacks⁴.

School students are prone to unhealthy snacking habits because they lack understanding of how to choose safe foods. Generally, snacks are chosen based on taste without considering their ingredients. Foods with attractive colors, shapes, textures, aromas, and flavors are more popular even though they are low in nutritional value⁵. Students usually only consider taste and low price without thinking about food safety. This risks causing cases of poisoning at school and an increase in foodborne diseases due to contaminated food².

Food contaminated by various contaminants can cause diseases known as foodborne illnesses⁶. According to WHO data (2020), an estimated 600 million to nearly 1 in 10 people worldwide fall ill after eating contaminated food and 420,000 die each year, resulting in the loss of 33 million years of healthy life. Hermawati et al. (2020) state that in developed countries such as the United States, 3,000 people die each year from foodborne disease⁴. In Asia, particularly in developed countries such as China, it has been found that more than 250 children fall ill and 40 children die each year due to contamination from unhealthy street food⁷. Meanwhile, the results of testing samples of School Children's Snack Foods (PJAS) in 2021 in 34 provinces in Indonesia found that 87 food product samples (3%) did not meet the requirements for safe food. The test parameters that these food products did not meet were the presence of *E. coli*, formaldehyde, Rhodamine B, and borax⁸. This condition needs to be addressed by all parties. It is undeniable that PJAS plays a strategic role in determining children's health and influencing their learning achievements.

PJAS must fulfill the aspects of safety, quality, and nutrition (Badan POM, 2021).

The safety of street food plays an important role in preventing illness or poisoning due to food contamination⁹. Unhygienic food consumption can pose serious health risks. Data from the Ministry of Health shows that as of October 16, 2023, there were 4,792 cases of food poisoning, an increase of more than 1,000 cases compared to 2022 (3,514 cases). Of these, there were 96 extraordinary cases of food poisoning (KLB KP), with the highest numbers in West Java (1,679 cases), Central Java (1,082 cases), and East Java (701 cases). The highest number of KLB KP cases occurred in Yogyakarta and West Java, with 19 cases each. These poisoning cases even resulted in 15 deaths, with a case fatality rate of 0.31 percent.

The high number of food poisoning cases in Indonesia and other countries shows that food safety in society is still weak. Public awareness of food safety remains low due to a lack of knowledge about food safety and low income levels. Based on a preliminary survey conducted through questionnaires in October–December 2023, the results show that students' knowledge of food safety is still low: 60% at SMKN 1 Tuban, 70% at SMKN 3 Tuban, 80% at SMKN Palang, and 80% at SMKN Tambakboyo. Students stated that there are still many food handlers in the school cafeteria who do not wear gloves when serving food. Students also stated that most snacks in the cafeteria are sold without packaging and are placed in closed containers, and students who buy snacks mostly take the snacks they want themselves and then wrap them in plastic. This shows that understanding food safety is important when choosing food to consume in order to avoid foodborne diseases.

Food safety issues in Indonesia are an important topic that needs attention in food monitoring programs. School students are particularly vulnerable to unhealthy snacking habits due to a lack of knowledge and awareness

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of clean and healthy living behaviors¹⁰. They tend to choose snacks based on their preferences without considering the ingredients, which poses a risk to their health. Therefore, knowledge about food safety is very important so that students are able to understand and choose snacks that are safe for consumption. Students' attitudes towards food safety are influenced by their level of knowledge¹¹.

Food safety issues are not only the responsibility of producers, but also consumers, who need to have knowledge about hazardous substances in food. Consumer knowledge and attitudes influence decisions to purchase safe food¹². Incorrect food choices can cause health problems, such as poisoning due to unhygienic preparation and serving practices¹³.

One way to improve students' knowledge of food safety is through health education using audiovisual media, such as films. Films are considered effective because they present attractive images, sounds, and movements, can be replayed, and are suitable for school children¹³. This media can stimulate imagination, improve concentration, and facilitate understanding, thereby encouraging students to apply what they have learned to form a good knowledge base¹⁴.

With the rapid advancement of technology, teenagers now often use gadgets to watch movies. This can be utilized through the creation of educational films to increase students' knowledge about food safety. Audiovisual media has the advantage of combining sound and images, making it more interesting. Most human knowledge (75–87%) is obtained through the eyes and ears, while the rest (13–25%) is obtained through other senses¹⁵.

Duran's (2021) research shows that there are significant differences in knowledge, attitudes, and self-efficacy before and after health education through film media¹⁶. This is in line with research conducted by Sowa (2020),

which shows that health education through short films has an effect on increasing school-age children's knowledge about choosing healthy snacks¹⁰. In line with Andreson's (2024) research, which proves that there is a difference in knowledge about IVA examinations before and after health promotion with two film screenings, where film media is more effective than leaflets².

Based on this background, the researcher was interested in conducting research on Health Education via Audiovisual Media to Improve Students' Food Safety Knowledge among vocational high school students in Tuban Regency.

2. METODE

This study used a pre-experimental design with a one-group pre-test post-test design. The study population consisted of all 10th grade students at SMKN 1 Tuban, SMKN 3 Tuban, SMKN Palang, and SMKN Tambakboyo, totaling 1,514 students. Based on sample calculations using the Slovin formula with a 5% margin of error, the sample size was determined to be 307 respondents. Sample selection was carried out using probability sampling techniques with the cluster random sampling method, in which four vocational high schools were selected as research locations. Respondents who met the inclusion criteria were then selected as research samples. This study was conducted in four selected vocational high schools in Tuban Regency at a predetermined time. The instruments used were a health education program through audiovisual media (films) as an intervention guideline, and a questionnaire modified from previous studies to measure students' knowledge of school canteen snack food safety. This questionnaire assessed the level of knowledge in the categories of Good ($\geq 75\%$), Fair (56–74%), and Poor ($\leq 55\%$). Data analysis was performed using the Wilcoxon Signed Rank Test non-parametric test with the help of the SPSS program at a significance level

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of 0.05 to determine the difference in students' knowledge levels before and after the intervention.

3. RESULTS AND DISCUSSION

Table 1. Distribution of Respondents

Characteristics	N	%
Age		
15 year	49	16
16 year	196	63,8
17 year	62	20,2
Gender		
Male	83	27
Female	224	73
School of Origin		
SMKN Tambakboyo	86	28
SMKN 3 Tuban	68	22,1
SMKN 1 Tuban	138	45
SMKN Palang	15	4,9

Based on Table 1, it can be seen that of the 307 (100%) respondents, most were 16 years old, namely 196 (63.8%) respondents. The majority of respondents were female, namely 224 (73%) respondents. Most of them were students of SMKN 1 Tuban, namely 138 (45%) respondents.

Table 2. Students' Knowledge of School Canteen Snack Food Safety Before and After Health Education through Audiovisuals (Films)

Health Education through Audiovisual Media (Film)	Food Safety Knowledge			Total
	Good	Fair	Less	
<i>Pre-Test</i>	22 (7,2%)	67 (21,8%)	218 (71%)	307 (100%)
<i>Post-Test</i>	276 (89,9%)	31 (10,1%)	0 (0%)	307 (100%)
<i>Wilcoxon Signed Rank Asymp. Sig (2 tailed) = 0,000</i>				

Table 2 shows that before receiving health education through audiovisual media (films) at vocational high schools in Tuban

Regency, 218 (71%) respondents had poor knowledge of food safety. After receiving health education through audiovisual media (films) at vocational high schools in Tuban Regency, 276 (89.9%) respondents had high-level food safety knowledge. The Wilcoxon test with a significance level of $\alpha < 0.05$ using SPSS version 25 for Windows software yielded an Asym. Sig (2-tailed) value of 0.000, which means that the smaller the p-value, the more significant the results of the study.

Students' Knowledge of School Canteen Snack Food Safety Before Receiving Health Education through Audiovisual Media (Film)

The results of the study indicate that most students have good food safety knowledge, meaning that most students have adequate food safety knowledge.

Food safety is an effort to ensure that the food consumed is safe, of high quality, and free from risks that are harmful to health. Food safety knowledge can be defined as the awareness and understanding possessed by individuals regarding the principles, practices, and steps necessary to ensure that the food consumed is free from biological, physical, and chemical contamination and does not endanger health¹.

Students' lack of understanding of food safety indicators can make them unaware of the health risks posed by snacks sold in school canteens. One of the reasons for this lack of knowledge is the limited coverage of food safety in the education curriculum¹⁷. This topic is generally only discussed briefly, for example, limited to recommendations to wash hands before eating. Meanwhile, other important aspects such as factors causing food contamination and characteristics of safe food receive less attention, so students do not have sufficient knowledge to select healthy and safe snacks.

The social environment has a significant influence on students' level of knowledge. When families and peers do not pay attention to food

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safety issues, students tend to imitate the same behavior. This is because at school age, children do not yet have full independence in making decisions and are more easily influenced by group habits⁷. According to the Health Belief Model (HBM) framework, self-efficacy is a key factor that determines whether a person is willing to take preventive health measures or not, based on their perception of risk, severity, benefits, and existing barriers. Self-efficacy also plays a role in snacking habits. Students with strong self-efficacy will still be able to choose healthy foods, even when pressured by their peers to consume risky snacks. They have confidence in their personal ability to make choices that support their health⁴.

Based on the description of the theory and existing facts, before providing health education through audiovisual media (films), researchers argue that students' knowledge is not only influenced by individual factors, but also by their social environment. If families and peers do not pay attention to the importance of food safety, students will tend to imitate this pattern. This happens because during their school years, children do not yet have the ability to make decisions independently and are more likely to follow group habits. Within the framework of the Health Belief Model (HBM), self-efficacy plays an important role in encouraging individuals to engage in preventive health behaviors. Individual decisions are usually influenced by how they perceive risk, severity, benefits, and barriers. In the context of choosing snacks, students with good self-efficacy will be able to stick to healthy food choices, even when pressured or encouraged to consume unhealthy snacks. It is this self-efficacy that makes them believe that they are capable of making choices that support their health.

Students' Knowledge of School Canteen Snack Food Safety After Receiving Health Education through Audiovisual Media (Film)

The results of research conducted by researchers show that after receiving health education through audiovisual media (films), most students at vocational high schools in Tuban Regency had good knowledge of food safety.

Research conducted by Hasanica et al. (2020) shows that health promotion media using audiovisual media is more effective than snakes and ladders games and control groups in increasing students' knowledge about healthy snacks¹⁸.

Audiovisual media in the form of films are an effective educational tool because they combine sound, images, and movement to attract students' attention. Films can be replayed as needed and can create a fun and easy-to-understand learning environment. Through attractive visual displays, this medium helps improve students' concentration, imagination, and interest in learning. Thus, students are encouraged to apply the material they have learned and are expected to develop better knowledge¹⁹.

According to Fanny et al. (2024), the social environment has a significant influence on students' health behaviors, where peers and families who do not pay attention to food safety can cause students to imitate the same habits due to limited independence in decision-making¹⁴. A similar finding was reported by Mayasari et al (2020) who stated that family and peer group support greatly determines the formation of healthy eating behaviors in school children¹¹. Furthermore, research by Yandi et al. (2021) confirms that self-efficacy within the Health Belief Model framework plays an important role in encouraging students to continue choosing healthy snacks despite pressure from their environment²⁰.

Researchers assumed that there was a significant increase in students' knowledge of food safety after being given health education interventions through the screening of

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educational films. The majority of respondents demonstrated a good understanding, as seen from their ability to explain the risks of food contamination, prevention efforts, and how to choose the right snacks during the evaluation. Respondents who previously had sufficient knowledge mostly improved to good, while those who initially had insufficient knowledge mostly improved to good and some to sufficient. The different conditions among a small number of respondents were likely due to a lack of attention during the film screening because they were talking more with friends, causing them to miss some of the material.

The Effect of Health Education through Audiovisual Media (Films) on Students' Knowledge of Food Safety in School Canteens

The statistical test results in this study indicate that health education through audiovisual media (films) has an effect on students' knowledge of school canteen snack food safety.

In line with the research conducted by Anderson (2024), which shows that health education using audiovisual methods is effective in influencing students' behavior regarding healthy and safe snacks². The results of research by Yusuf et al (2020) also show that there is an effect on knowledge after providing nutrition education using video media. After receiving nutrition education, students' knowledge scores increased from 75.6 to 87⁶.

Knowledge arises after a person perceives an object through the five senses, such as sight, hearing, smell, taste, and touch. Knowledge can be increased through education or health counseling, because health education is essentially a learning process that aims to influence the knowledge, attitudes, and behaviors related to the health of individuals and groups¹⁸.

Researchers believe that health education provided to students is an appropriate measure to break the chain of unhealthy snack consumption among students. The change in food safety knowledge among students through audiovisual (film) education is due to the fact that health education using audiovisual (film) media is conducted in a fun, interesting, and effective manner, making it well-received by respondents. Researchers believe that health education provided to students is an appropriate measure to break the chain of unhealthy snack consumption among students.

4. CONCLUSION

Before receiving health education through audiovisual media (films), most vocational high school students in Tuban Regency had low levels of food safety knowledge. After the intervention, the majority of students showed improvement and gained a good level of knowledge about food safety. The results of the analysis using the Wilcoxon test showed a significant effect of health education through audiovisual media (films) on students' knowledge of school canteen food safety. This is because audiovisual media are more interesting and easier to understand, making it easier for students to accept and remember the material presented.

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