



The Effectiveness of Animated Video as Learning Media Towards The Perception of Healthy Snacks on Elementary School Students in Indonesia

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Abstract

The negative effect of consuming unhealthy snacks is foodborne illness caused by food and drinks that have been contaminated with germs. This problems need a serious intervention especially education for the school children to develop understanding of the importance of healthy, safe and nutritious snacks. It was reported that 73% of elementary school students have low knowledge and 81% have low attitude towards healthy snacks. Amongst efforts to educate children on healthy snacks is the audio-visual media. This study is conducted to investigate the effectiveness of animated video and power point as learning media towards the perception of healthy snacks on elementary school students in Indonesia. The design is quasi experiment with control group, with the sample of grade 5s' elementary school students. Data were collected using questionnaires developed from health belief model and intervention is given in the form of health education using animated video media. The results show that there are perception differences in susceptibility ($P=0.0001$), seriousness ($P=0.0001$), benefits ($P=0.0001$), and obstacles ($P=0.0001$) related to healthy snacks before and after education with animated video. Based on that, it is expected to the schools and parents to give attention to the quality of the snacks by educating and providing the children with healthy snack options.

Keywords: animated video, healthy snacks, elementary school students

Background

Schoolchildren snacks are difficult to supervise. Children tend to eat unhealthy food or snacks at school or environment, because they start to interact with other people or peers (Skinner *et al.* 2012). Based on the research by *The National Health and Nutrition Examination Survey* (NHANES) in 2015 in the U.S., 40% of schoolchildren consume snacks daily. Children who consume snacks will have lower appetite and trouble with nourishment like lower body weight or being obese (Wood *et al.* 2003).

American government made a program in 2016, *The United States Department Of Agriculture* (USDA's) about children's snacks that is schools provide breakfast, lunch, and milk and ask for mother's participation in giving food and snacks after school as determined.⁵ Indonesian government also pay attention to children's snacks as stated in Law of Indonesian Republic No. 18 year 2012, that is food as basic human need and human

rights of every citizen and guarantee of safety, quality and nutrition. One of the foods that need government attention and the school itself is students' snacks because it has role in nutrition fulfillment and keeping with students learning at school (Anonimus, 2012).

The status quo in Indonesia, especially in children, is experiencing double burden, that is nutrition deficiency and nutrition excess. Based on Basic Health Research (Riskesdas) 2013 nutrition status prevalence for children age 6-12 years with very thin category 4.6%, thin 7.6%, normal 78.6% and fat 9.2%. nutrition status prevalence for children with stunting (very short 15.1%, short 20%) and normal 64.5%. Anemia prevalence, based on Depkes (2008) children Anemia prevalence in school age children is 47.2% (Kemenkes, 2013).

Children are still in the growing and developing stage, that is why they need to consume enough food with balanced nutrition. Study shows that the level of adequacy of energy and protein for children

age 7-12 years ranges from 71.6-89.1% and 85.1-137%. However, data shows that 44.4% and 30.6% children consume energy and protein below the adequacy line. To fulfill energy and protein needed by schoolchildren, snacks (PJAS) are needed by students who do not eat enough breakfast or carry food. PJAS nutrition contribution towards nutrition daily requirement ranges from 15-20% (BPOM, 2013).

The bad effect of consuming snacks is foodborne illness caused by food and drinks that are contaminated with germs. The sign and symptoms are diarrhea, vomiting, stomach pain, puffed and fever. The effort to fix schoolchildren nutrition involves school and parents to supervise food selling and provide school feeding or lunch, or build the healthy canteen at school.¹⁰ In developing countries like Indonesia, it has program like PMT-AS (Schoolchildren food providers) where schools provide snacks as government effort to improve education, health, and nutrition of schoolchildren.

Schoolchildren snacks problem need a serious intervention especially education for school community in understanding the importance of students to consume safe and nutritious snacks only and ensure that no substance dangerous and unsafe found in school environment. One of the education of healthy snacks suitable for schoolchildren is by animation video. This statement is in accordance with the study of Siwi, et al (2014) about improving the quality of healthy snacks for schoolchildren by animated video. That research shows that there are change in knowledge, attitude and action of schoolchildren that were given healthy snacks education using audio visual compared with the ones not given intervention (Siwi *et al.* 2014).

Children knowledge and attitudes towards attention-deficit tended to be major contribution for the gap of understanding to consume the healthy snack. This research was therefore initiated to analyze the effectiveness of animated video and power point as study material towards perception about healthy snacks in public elementary schools in Indonesia.

Materials and Methods

The study was conducted in a province in the country of Indonesia. Ethical clearance was obtained from Health Polytechnics of Aceh Research Committee as well as permission from the schools where the study undertook.

This study used quasi experiment with control group design. Sample in this research is divided into two groups, which is two elementary schools as intervention group labelled as Elementary School (ES) IA (39 students) and ES IB (40 students) and two elementary schools as control group, ES IIA (37 students) and ES IIB (38 students). Data collection uses questionnaire of Health Belief Model theory. Bivariate analysis was used to analyse the data.

Results

Table 1 shows that the mean perception of elementary school students about healthy snacks in intervention group. Perception about vulnerability with mean pre test 2.35 and post test 4.56. Furthermore, perception towards seriousness with mean pre test 2.15 and post test 3.86. Perception of benefits with a mean pre test of 2.18 and post test of 3.91. Then also the perception of obstacles with a mean pre test of 1.52 and post test of 3.30.

Table 1. Elementary School Students Perception Towards Healthy Snacks in Intervention Groups (n=79).

No	Perception	Mean	Mean Difference	P Value
Vulnerability				
1	Pre Test	2,35		
2	Post Test	4,56	2,21	0,0001
Seriousness				
1	Pre Test	2,15		
2	Post Test	3,86	1,71	0,0001
Benefit				
1	Pre Test	2,18		
2	Post Test	3,91	1,73	0,0001
Obstacles				
1	Pre Test	1,52		
2	Post Test	3,30	1,78	0,0001
Perception				
1	Pre Test	8,20		
2	Post Test	15,63	7,43	0,0001

In general, based on the results of the analysis it is known that students' perceptions of healthy snacks with a mean pre-test is 8.20 and post-test is 15.63. This explains that there is an increase in the mean

value of perception about healthy snacks in the intervention group students by 7.43. This means there was a change in perceptions about healthy snacks in the intervention group students between before and after health education with video animation.

Table 2. Elementary Students' Perceptions About Healthy Snacks in the Control Group (n = 75).

No	Perception	Mean	Mean Difference	P Value
Vulnerability				
1	Pre Test	2,20	0,04	0,435
2	Post Test	2,16		
Seriousness				
1	Pre Test	2,08	0,05	0,638
2	Post Test	2,03		
Benefit				
1	Pre Test	2,40	0,2	0,033
2	Post Test	2,20		
Obstacles				
1	Pre Test	1,52	0,11	0,113
2	Post Test	1,41		
Perception				
1	Pre Test	8,07	0,27	0,188
2	Post Test	7,80		

Table 2 above shows that the mean value of elementary school students' perceptions of healthy snacks in the control group. Perception of vulnerability with mean pre-test of 2.20 and post-test of 2.16. Furthermore, the perception of seriousness with a mean pre test of 2.08 and post test of 2.03. Perception of benefits with a mean pre test of 2.40 and post test of 2.20. Then also the perception of obstacles with a mean pre test of 1.52 and post test of 1.41.

In general, based on the results of the analysis it is known that students' perceptions of healthy snacks with a mean pre test was 8.07 and post test was 17.80. This explains that there was a decrease in the mean value of perceptions of healthy snacks in the control group students by 0.27. This means there was no change in perceptions about healthy snacks in control group students between before and after health education with power point media.

Table 3 above shows the change in perception about healthy snacks between the intervention group and the control group. Vulnerability perception shows the mean rank of the intervention group (106.62) higher than the control group (46.83). The same thing is also shown from the results of

the analysis of the perception of seriousness, where the mean rank value of the intervention group (102.25) is higher than the control group (51.43).

Table 3. Elementary Students' Perceptions of Healthy Snacks Between Intervention and Control Groups (n = 154).

No	Perception	n	Mean Rank	P Value
Vulnerability				
1	Intervention G	79	106,62	0,0001
2	Control Group	75	46,83	
Seriousness				
1	Intervention G	79	102,25	0,0001
2	Control Group	75	51,43	
Benefit				
1	Intervention G	79	105,84	0,0001
2	Control Group	75	47,65	
Obstacles				
1	Intervention G	79	103,92	0,0001
2	Control Group	75	49,67	
Perception				
1	Intervention G	79	114,09	0,0001
2	Control Group	75	38,96	

Furthermore, the results of the analysis of the perceived benefits showed the mean rank of the intervention group (105.84) higher than the control group (47.65). The results of the analysis of perceived barriers also showed the mean rank of the intervention group (103.92) was higher than the control group (49.67). In general, the results of the analysis illustrate that the mean rank value of perceptions about healthy snacks in the intervention group (114.09) is higher than the control group (38.96).

Discussion

Vulnerability Perception to Illnesses due to Snacks.

The results of the above study indicate that health education through video animation related to healthy snacks can improve the perception of elementary school students that unhealthy snacks can cause a person to become sick. Perception of vulnerability is important in influencing an individual's healthy behavior, because by feeling vulnerable to an illness, the individual will try to take preventative measures and improve healthy behavior.

The above statement is in accordance with the opinion expressed by Hochbaum, Rosenstock and Kegels, namely perception

of vulnerability, also called perceived vulnerability, referring to one's perception of the risk or possibility of contracting a disease or health condition. This can also include estimates of susceptibility to disease in general. Risk or vulnerability is one of the stronger perceptions in promoting people to adopt healthy behaviors. The greater the perceived risk, the greater the likelihood of engaging in behavior to reduce risk. (Green *et al.*, 2014)

Research conducted by Abed *et al.* (2014) proves that learning media in the form of audio-visual (video) in health education has proven to be effective in improving individual behavior in maintaining health and preventing disease. (Abed *et al.*, 2014) Furthermore, Mainbolagh, *et al.* (2012) in his study stated that after being given health education, there was an increase in the average score of perceptions of vulnerability and severity of nutrition in primary school children.

Shahnazi, *et al.* (2016) in his research also showed that health education carried out gradually and continuously was proven to be able to improve perceptions of perceived vulnerability to disease. (Shahnazi, *et al.*, 2016) Based on the results of this study, it can be concluded that health education through video media was proven to be effective in increasing the perception of elementary school students about susceptibility to diseases due to unhealthy snacks.

Perception of the Seriousness of Illnesses caused by snacks.

The research above shows that health education through video related to healthy snacks can increase elementary school students' beliefs about the seriousness and severity of illness due to unhealthy snacks.

The perception of seriousness of disease is an individual's belief in unhealthy things that can cause serious or severe illness. This is as stated by Mc Cormick and Brown 1999 in Jones and Bartlett, (2008), that the perception of the seriousness or severity of a disease including how a person sees the bad consequences of a serious health event. Severity is considered as a person's belief about the importance or

magnitude of health threats. The perception of seriousness is often based on medical information or knowledge. It also can come from the belief of someone who has experienced difficulties due to illness and has an impact on his life in general (Jones and Bartlett, 2008).

Research conducted by Mainbolagh, *et al.* (2012) in their research stated that after being given health education, there was an increase in the average score of perceptions of the seriousness about nutrition in elementary school children, regression models show perceptions about the seriousness perceived as a significant predictor of elementary school student behavior. Naghashpour, *et al.* (2014) in his research also stated that health education had a significant influence on perceptions about the seriousness / severity associated with nutrition problems in students.

Perception of the Benefits of Healthy Snacks.

The results of the study above indicate that health education through animated videos about healthy snacks can improve elementary students' perceptions about the uses and benefits obtained by consuming healthy snacks or foods. Perceptions about the benefits of healthy actions or behaviors are one's beliefs in positive results of implementing healthy behaviors. This is as said by Jones and Bartlett (2008), namely the perception of perceived benefits is someone's opinion about the value or usefulness of a new behavior to reduce the risk of developing a disease. Perception of benefits refers to the perception of positive consequences caused by certain actions. In health behavioral science, perceived benefits are a term that is often used to describe individual motives for conducting behavior and adopting interventions or treatments. Researchers and theorists try to measure positive perceptions because they believe that behavior is driven by individual cognition in terms of acceptance, motives, and attitudes towards positive behavior (Jones and Bartlett 2008).

The above statement is also supported by research conducted by Solhi, *et al.* (2010), namely health education about

oral hygiene in elementary students increases perceptions of the benefits of routine tooth brushing. Based on the results of this study, it can be concluded that health education through video media has proven to be effective in increasing elementary school students' perceptions about the benefits of healthy snacks.

Perception of Obstacles to Healthy Snacks.

The results of this study explain that health education about healthy snacks with the most effective animated videos increases the perception of elementary school students that there are no obstacles in healthy snacks. Based on the results of this study it can be concluded that elementary students who get health education about healthy snacks through video animation media can feel a greater benefit than the obstacles faced related to healthy snacks at school. The same statement was made by Jones and Bartlett (2008), namely that for new health behaviors to be adopted, one needs to believe that the benefits of the new health behavior outweigh the consequences of continuing the old behavior. This makes it easier to overcome existing obstacles and new behavior can be adopted properly.

Perceptions of perceived barriers refer to one's feelings towards barriers to taking recommended health actions. This perception occurs when a person's feelings about the cost or benefit analysis of a health action contradicts the perception of the high costs involved, the risk of harm that must be faced (e.g., side effects), an unpleasant feeling from taking a health action (e.g., feeling sick), the length of time that must be taken to take health actions and the inconvenience caused from these health measures. (Glanz *et al.*, 2008)

Krisnana, *et al.* (2015) in the study stated that there was a significant influence of health education using lectures with short film media on knowledge and attitudes in preventing diarrhea in Gading V elementary school in Surabaya. Providing health education using lectures with short film media can improve not only the knowledge and attitudes of school-age children about the prevention of diarrhea, but also can

improve perceptions of the perceived benefits and barriers perceived in taking preventative action.

Conclusion

This study shows that there is a change in perception about healthy snacks in the intervention group between before and after health education about healthy snacks with video animation. It can be concluded that health education through video animation media has proven to be effective in increasing elementary school students' perceptions of obstacles in healthy snacks.

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