

# Effectiveness of Emotional Demonstration in Changing Knowledge, Attitudes and Behavior of Eating Snacks for Obese Elementary School Students in East Jakarta

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**Keywords:** Behaviour, Emodemo, Obesity, Snacks.

**Abstract:** The purpose of this study was to determine the effect of emodemo with magnetic poster media on the knowledge, attitudes and eating behavior of obese students at two elementary school in East Jakarta City. This is Quasi Experimental research with pre and posttest design method. The sample in this study was 48 obese children in grades IV and V. Data was collected using a questionnaire and the SQ FFQ (Food Frequency Questionnaire) form and analysis used the Wilcoxon Test and the Paired T Test. The results showed a difference in the average knowledge (p value < 0.001), attitudes (p value < 0.001), snack eating behavior, namely energy intake (p value < 0.001), and fat intake (p value < 0.001) after giving healthy snacks emodemo with magnetic poster media. However, in fiber intake, there was no change in the mean before and after the intervention (p = 0.719). This study recommends that posters are very appropriate and relevant to be used as a form of learning media in increasing knowledge, understanding of snacking attitudes and behavior by being able to add a more varied list of snacks not only in the school environment but also in the neighborhood where they live.

## 1 INTRODUCTION

According to the World Health Organization, obese children are at high risk for degenerative diseases, premature death, disability, difficulty breathing, insulin resistance and an increased risk of fractures in adulthood (World Health Organization, 2021). In addition, obese children also have a risk of experiencing delays in motor and mental development compared to children who have normal nutritional status (Cataldo et al., 2016).

The prevalence of children aged 5-19 years in the world in 2016 reached 42.7% (World Obesity Federation, 2019). The World Obesity Federation (2019) also predicts that Indonesia is in fourth place with 9 million obese children in 2030 or an increase of 17.7% aged 5-9 years and 11.8% aged 10-19. RISKESDAS data shows an increase in the number of obese children aged 5-12 years from 8.8% in 2013 to 9.2% in 2018 (Ministry of Health, 2018).

The incidence of obesity in children is influenced by many factors, such as genetics (OR = 4.3) (Nuzula et al., 2021), imbalance in energy intake (OR = 14.59) (Kurniawati & Fayasari, 2018), snack

habits (OR = 4.3) (Rahmad, 2018), sedentary life style (OR = 6.93) (Arundhana et al., 2016), habit of skipping breakfast (OR = 2.8) (Sidiartha & Pratiwi, 2020), and short sleep duration (OR = 5.4) (Marfuah & Hadi, 2013).

Previous study showed that snack foods contributed one third of the energy needs of school children due to the number and type of snack choices that were not appropriate (Aini, 2019). The Ministry of Health of the Republic of Indonesia also states that 40-44% of school children's snacks do not meet health requirements because of the use of hazardous food ingredients and unbalanced nutritional content (high in fat and lacking in fiber) (BPOM, 2016).

Research on 34 obese students at SDN 20 Banda Aceh found 79.4% of obese children had excessive snack consumption, the results of the analysis showed that children with excess snacks had four times the risk of being obese (OR = 4.3 and p-value = 0.012) (Rahmad, 2018). Nisak & Mahmudiono's research (2017) on 112 children at SDN Ploso I, Tambaksari Sub-district, Surabaya showed that children who had obese nutritional status tended to

choose fatty snacks and were eight times more likely to be obese (OR = 8.7 and p-value = 0.045).

Seeing the inappropriate behavior of snacking in obese school children, obesity prevention is an important part that must be done as early as possible (Hastoety et al., 2017; Julita et al., 2021). Prevention in the form of health promotion or intervention is one way that can be done, interventions with the topic of healthy snacks can be modified and help in preventing obesity at school age (Health, 2014).

Emotional demonstration or emodemo is an educational method that uses a behavior centered design (BCD) approach where the method used is simple, fun and can touch emotions (Birawida et al., 2019). Emodemo with the play-based learning method is a fun and appropriate game-based learning method in influencing knowledge and attitudes (Viggiano et al., 2015).

Research on 28 children of Assa'adah Islamic Elementary School Cilandak showed that emodemo media in the form of balanced nutrition videos was able to increase children's knowledge regarding energy balance, building blocks and regulatory substances (Arumsari & Fitriani, 2020). The research of (Safitri et al., 2021) also showed an increase in knowledge scores of 18.25% in 20 5th graders at SDN Tologosari 02 and SDN Palebon 02 after nutrition emodemo with puzzle media was carried out. This increase in numbers was greater than children who were only given education with lectures, where the increase was only 12.25%.

The results of a preliminary survey conducted on 30 students showed 29% of children had obesity nutritional status. The sample in this study were grades IV and V because they were able to receive messages easily so that they were able to influence changes in knowledge, attitudes and behavior towards the better (Arimurti, 2012). We used two schools as sample was due to different characteristics in the provision of food service in schools. We assumed that the aspects of food service condition were one of the causative factors in the behavior of eating snacks at school.

Based on the above background, researchers are interested in conducting research related to the effect of healthy snacks emodemo with eating behavior by obese students at SDN Utan Kayu Selatan 13 Pagi and SD Islam PERSIS 69 Matraman, East Jakarta.

## 2 METHOD

This study method is a quantitative study with a Quasi Experimental design with a one group pretest

posttest design. This research was conducted at SDN Utan Kayu 13 Pagi and SDI PERSIS Matraman in May – June 2022. The population in this study was 48 obese students in grades IV and V. Sampling was done by total sampling method that met the inclusion criteria.

The inclusion criteria in this study were students in grades IV and V who had BMI/U values  $>2SD$  and were willing to fill out informed consent. Meanwhile, the exclusion criteria in this study were students who were color blind and could not read.

The independent variables in this study were knowledge of snacks, attitudes of snacks and behavior of eating snacks. Snack food knowledge is information that children have regarding the characteristics, for example, the nutritional content of snacks and the impact of consuming unhealthy snacks. Snack food attitude is the opinion and assessment of children in choosing snack foods purchased at school and outside school and snack eating behavior is the average amount of energy, fiber and fat consumed by children from snack foods.

Instruments used in research is an emotional demonstration with a magnetic poster media for healthy snacks made by researchers as an educational media. Magnetic healthy snacks poster is a poster that contains pieces of magnets, where in one magnetic poster package there are sheets related to the characteristics of healthy and unhealthy snacks, magnetic pieces of examples of healthy and unhealthy snacks, one shopping basket and two shopping lists.

The emotional demonstration used in the intervention is to invite respondents to participate in the research process, namely by playing a role play between the seller and the buyer, where a story is made as if the seller and buyer are making a sale and purchase transaction for healthy and unhealthy snacks with a grocery list guide.

Knowledge and attitude data about snacks were taken using a questionnaire, while for snack eating behavior using the SQ FFQ (Semi Quantitative Food Frequency Questionnaire) by looking at the average difference in knowledge, attitude and average intake of energy, fat, and fiber (grams) before and after being given a magnetic poster demonstration of healthy snacks emotional intervention.

Differences in knowledge scores and attitudes about snack foods before and after the intervention were tested with the Wilcoxon Signed Rank Test. Differences in snack eating behavior in the form of average intake of energy, fat, and fiber before and

after the intervention were tested with the Paired T-Test.

### 3 RESULTS

#### 3.1 Page Setup

The study involved the 48 students which 28 children (58.3%) from SDN 13 Pagi and 20 children (41.7%) from SDI PERSIS. Respondents in this study were mostly from class V, which was 31 children (61.4) compared to class IV students, namely 17 children (35.4%). As for the age of the respondents, most of them were 11 years old, namely 30 children (62.5%) and the gender of the respondents was mostly dominated by boys, namely 30 children (62.5%) compared to girls, namely 18 children (37.5%) (table 1).

Table 1: Distribution of Respondents by Characteristics.

Characteristics	N	%
School		
SDN 13 Pagi	28	58,3
SDI PERSIS	20	41,7
Total	48	100
Grade		
IV	17	35,4
V	31	64,6
Total	48	100
Age		
9 years old	2	4,2
10 years old	12	25
11 years old	30	62,5
12 years old	4	8,3
Total	48	100
Gender		
Man	30	62,5
Women	18	37,5
Total	48	100

#### 3.2 Knowledge, Attitude, and Eating Behavior

This study's result showed an increase in the average value of snack food knowledge with an increase of 16.46 (Table 2). In addition, there was also an increase in the lowest score in the pre and posttest,

where in the pretest the lowest value was 50 and in the post test it was 70. However, in the pretest and posttest, the maximum score was the same, which was 100.

Table 2: Mean Pre-Post Test Score Snack Food Knowledge, Attitudes and Behavior.

Variable	Pre-Test		Post Test	
	Mean	Min-Max	Mean	Min-Max
Knowledge	78,75	50-100	95,21	70-100
Attitudes	89,89	70-100	96,56	85-100
Behavior				
	Mean		Mean	
Energy (kkal/day)	381,28		345,63	
Fat (gr/day)	14,86		13,32	
Fiber (gr/day)	1,50		1,3	

An increase in the average value of snack food attitudes with an increase of 6.67 (Table 2). In addition, there was also an increase in the lowest score in the pre and posttest, where in the pretest the lowest score was 70 and in the post test it was 85. The maximum value in the pretest and posttest was the same, namely 100, where this result showed that there are students who can answer statement of the attitude of street food perfectly.

The Study showed the average intake of energy, fat, and fiber. Before and after the intervention decreased by a difference of 87.58 kcal in energy, 3.41 grams of fat and 0.15 grams of fiber (Table 2). This average, when compared with the RDA for children aged 9-12 years, the percentage of energy and fat intake from snacks in the pre-test showed results >20% (21% and 24%) and decreased in the post-test results with results <20 % (16% and 18%). Meanwhile, fiber intake in both pre-test and post-test did not reach 1%, only (0.06% and 0.05%).

#### 3.3 Differences before and after Intervention

Based on the Wilcoxon test, it showed that the average score of pre-test and post-test knowledge of snacks has a difference of 16.45 with p-value <0.05. This indicates a significant average difference between knowledge of snacks before and after the intervention with healthy snacks magnetic poster media. The test results also showed that the score changes before and after the intervention were mostly in the positive direction, namely 71% which means that there were 71% of respondents who experienced an increase in the score of snack food knowledge after being given the intervention.

The average score of pre-test and post-test attitude towards snacks also has a difference of 6.67 with p value <0.05, this indicates that there is a significant difference between the attitudes of snacks before and after the intervention using the media. healthy snacks magnetic poster. In addition, the results also showed that there was a change in the score before and after the intervention in the most positive direction, namely 69%, which means that there were 69% of respondents who experienced an increase in knowledge scores.

Based on the Paired T Test statistical test, the p-value was obtained for energy (p value = 0.001) and fat (p value = 0.001), while based on the Wilcoxon test on fiber (p value = 0.719). P-value on the amount of energy and fat intake <0.005 which indicates a significant difference in the average amount of energy and fat intake before and after the intervention using a magnetic poster media for healthy snacks. While the p value of fiber intake > 0.05 which means there is no significant difference in the average amount of fiber intake before and after the intervention using the magnetic poster media of healthy snacks.

Table 3: Differences in Average Knowledge, Attitudes and Behavior of Snacks Before and After Intervention.

Knowledge	Value		P Value
	Mean ± SD	Min – Max	
Pre-Test	78,75 ± 11,96	50 - 100	0,001
Post Test	95,20 ± 7,71	70 – 100	
Attitude	Value		P Value
	Mean ± SD	Min – Max	
Pre-Test	89,89 ± 6,56	70 – 100	0,001
Post Test	96,56 ± 4,51	85 - 100	

Table 4: Differences in Average Behavior (Energy, Fat and Fiber) Before and After Intervention.

Nutrition	Intake Average		P-Value
	Before	After	
	Mean ± SD	Mean ± SD	
Energy	381,28 ± 113,22	345,63 ± 90,86	0,001
Fat	14,88 ± 5,36	13,32 ± 4,06	0,001
Fiber	1,50 ± 1,46	1,30 ± 0,77	0,719

#### 4 DISCUSSIONS

According to mayasari et al (2020) poster media has a great influence in increasing one's knowledge compared to leaflet or comic media, through posters one can absorb as much as 30% of information from images and 10% of information read on posters.

Healthy snacks magnetic poster emodemo media is a media based on the play-based learning method, which is made like a poster but adds magnetic pieces to each image and writing on the poster, so that respondents who use magnetic poster media feel like they are just playing. The use of media with the play-based learning method is a fun and appropriate game-based learning method in influencing knowledge and attitudes (Viggiano et al., 2015). Harsono et al (2019) also explained that providing information through interesting media and a pleasant atmosphere can increase children's motivation to receive messages and make it easier to remember them.

This is in line with the research of Safitri et al., (2021) which showed an increase in knowledge scores of 18.25% in 20 5th graders at SDN Tologosari 02 and SDN Palebon 02 after nutrition emodemo was carried out with puzzle media. media. another study on 60 fourth grade students at SDN 11 Serang which showed the effect of increasing knowledge related to the safety of snacks before and after giving the intervention using snakes and ladders game media.

The increase in children's attitudes regarding snack foods can be influenced by an increase in children's knowledge regarding snack foods as well, where good knowledge will help and shape children's attitudes in choosing food (Nuryanto et al., 2014).

Previous research by Afra et al (2021) showed that there was a significant difference between attitudes about balanced nutrition in 40 students at SDN Tanjung Duren 01 pagi before and after being given an intervention using picture cards, Enjelina et al also (2020) explain where there is an increase in the average attitude of 31% after a snack food safety intervention with monopoly game media.

A very visible change in attitude is the perception of children regarding choosing and buying snacks in a clean place where it can be seen from the increase in the number of students who answered correctly on the posttest with the statement by 25%. According to Notoatmodjo (2007) attitudes will not be formed if they have not there is a readiness within the individual to change behavior in order to reduce health risks.

This study, students' attitudes towards snack foods were influenced by sensing the images displayed in magnetic posters, where the magnetic posters and PowerPoints used in the intervention displayed objects related to the characteristics and impacts of unhealthy or clean snacks. In addition, in the magnetic poster media there are pieces of

magnets in the form of pictures of healthy or unhealthy snacks that are very easily recognizable by respondents. during the intervention the respondents were brought to learn while playing, with a role play game as a buyer and seller in which the activity could attract the attention of the respondents as seen from the enthusiasm of the emodemo participants.

Magnetic poster media is a visual media, where one of the advantages of visual media is that it can be used repeatedly and is able to make users really have a specific understanding and knowledge about the concept of information conveyed in the media (Swamilaksita et al., 2021) The habit of consuming snacks is very popular among elementary school children and difficult to break (Iklima, 2017; Legii et al., 2017). According to (BPOM RI, 2013) snack foods contributed 31.1% to the total energy intake of daily energy needs, in addition Bardosono & Pansawira (2021) explained that snack foods should only contribute 10-20% of daily nutritional needs or 160 - 300 kcal. while in this study the average daily energy intake of snacks both before and after the intervention was more than 300 kcal.

The high energy contribution of snack foods should be a consideration in choosing the type of snack food, namely by choosing healthy snacks, but in this study the high energy of street food is caused by the selection of snacks that are less healthy and only have high energy without any advantages in consuming snacks. other nutrients, the following is the amount of energy snacks available in both school environments:

One of the factors that cause high energy intake in respondents is because the types of snacks available in the school environment are snacks that have a high calorific value, such as, sakura noodles, toast, cakwe and arum manis.

Behavior change can be achieved with two types of approaches, the first approach is through education and the second is through coercion, in this study the type of approach taken is through education with interesting media, where education is obtained from exposure to information on snacks. snack eating behavior is a person's way of thinking, knowing and having views about street food which is manifested in the form of eating and choosing snacks (Nurchayani, 2020).

The use of interesting media and based on play-based learning facilitates the delivery and information will be easier to accept and understand, one of which is the use of posters which are props in health promotion activities to school children. this is in line with the research of Nasution & Arifin (2021)

where there is an influence in the act of choosing snacks on the actions of students at SDN 06 Medan after the intervention using role play-based poster media. Another study by also showed an increase in the behavior of eating healthy snacks from an average of 18.28 to 33.67 in 43 students of SDN 183 Pinrang regency after an intervention with picture card game media (Astarsari & Umar, 2021).

## 5 CONCLUSIONS

There is a difference and increase in the knowledge, attitudes and behavior eating snacks (energy and fat) of respondents before and after intervention. The intervention carried out was in the form of an emotional demonstration by combining the methods of emotional demonstration and play based learning with magnetic poster media, as evidenced by the average results of the study seen in the differences before and after the intervention in obese elementary schools on SDN Utan Kayu Selatan 13 Pagi and SD Islam PERSIS Matraman. During the intervention students played an active and enthusiastic role in using healthy snacks media, magnetic posters, for further researchers who wish to conduct similar research, it is hoped that further research can innovate on magnetic poster media in the form of snacks that are not only in the school environment but also in the surrounding environment, like at home. In addition, it can carry out sustainable interventions by creating healthy canteens in the school environment by collaborating with teachers and employees in the school environment.

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