



## THE EFFECT OF EDUCATION ON STUDENTS' KNOWLEDGE AND BEHAVIOUR ABOUT HEALTHY SNACKS AT SDN MERGOSONO 3 IN MALANG CITY

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### Abstract

Children often buy food outside and do not pay attention to hygiene and the content of the food. Based on a survey by the Food and Drug Administration, more than 99% of children consume snacks while at school. This high percentage allows the risk of health problems in children to be greater. The aim of the study was to identify the effect of education on students' knowledge and behaviour about healthy snacks. This research method is a quantitative method with a pre-experimental one group pre-test post-test research design. Sample determination using purposive sampling with a total of 30 respondents. The results of the study, the pretest knowledge of 13 students 43.3% good category, 17 students 56.7% sufficient category. After education, the results increased to 30 students 100% in the good category. Whereas in the results of behaviour before being given education (pretest) in the positive category none of the respondents behaved positively and negative behaviour of all 30 respondents 100%, behaviour after education (posttest) in the positive category increased to 100%. Hypothesis testing using the Wilcoxon Test with a knowledge value sign of 0.000 where ( $p < 0.05$ ) and a behaviour value sign of 0.000 where ( $p < 0.05$ ) so that it can be said that there is an increase in knowledge and behaviour after education to students about healthy snacks. It can be concluded that education is effective in improving students' knowledge and behaviour about healthy snacks.

**Keywords:** Behaviour, Healthy snacks, Knowledge, Quantitative

### Introduction

Consumption of snacks is something that is very attached to children. Children often buy food outside and do not pay attention to the cleanliness and content of the food. Based on a survey by the Food and Drug Administration (BPOM), more than 99% of children consume snacks while at school. The high percentage of children who consume snacks allows the risk of health problems in children to be greater because snacks play an important role in providing energy intake and other nutrients for school-age children..

National data states that 87% of children prefer to consume snacks in the school environment (1). Supported by the results of research by the Indonesian Consumers Foundation (YLKI) states that 98.7% of elementary school children (SD) like to consume snacks at school. Based on the results of preliminary studies in the canteen at SDN 3 Mergosono, there are foods that do not have serving hoods so that they have the potential to be infested with flies and some students do not do CTPS before handling food. Based on the results of interviews with teachers, there has been no health information or counselling about healthy snacks at school in the last 1 year. The habit of indiscriminate snacking in primary school children is significantly associated with the incidence of diarrhoea. According to the prevalence of diarrhoea based on the diagnosis of health workers listed in

the main results of the 2018 Riskesdes, there was an increase of 2.3% in the 5-year period from 2013 to 2018 in Indonesia. While in East Java province there was an increase of 2.1% . Based on data from the Malang City Health Office, there were 10,393 cases of diarrhoea and for elementary school children aged 6-14 years as many as 1,639 then in 2020 there were 4,396 cases for the category of all ages (2). Data on diarrhoea cases at Puskesmas Arjowinangun in (3) amounted to 323 in the category of all ages and the category of toddlers amounted to 78 toddlers.

Hazardous substances contained in various snacks can cause many negative things. According to Judarwanto 2011 in (4) these substances can accumulate in the human body and are carcinogenic which in the long run causes diseases including cancer and tumours in human organs. The short-term effects of children consuming these snacks cause very common symptoms such as dizziness, nausea, vomiting, diarrhoea or difficulty defecating, and other illnesses (5). There is also concern that brightly coloured foodstuffs may contain non-food colouring agents. The habit of snacking on energy-dense foods such as sweets and fatty foods also has the potential to make children overweight.

Education plays an important role in improving the knowledge and behaviour of students of SDN Mergosono 3, with education, knowledge and behaviour will increase so that it is expected to change bad behaviour in everyday life. Because we know that knowledge can affect a person's behaviour and attitude. Behaviour is determined by knowledge factors. For this reason, it is necessary to educate students of SDN Mergosono 3 to know, want, and be able to live a healthy life by consuming healthy snacks at school. By eating healthy snacks, students can avoid various diseases such as diarrhoea and so on.

In this study, researchers wanted to help elementary school students of SDN Mergosono 3 in an effort to increase knowledge and behaviour about healthy snacks at school. By using lecture and demonstration methods, it is expected to increase student knowledge at school which affects student behaviour in consuming healthy snacks. Based on the above background, researchers are interested in taking the title 'The Effect of Education on Students' Knowledge and Behaviour About Healthy Snacks at SDN Mergosono 3 Malang City".

## **Method**

This section briefly describes the research method. It consists of design, population, sample, data sources, measuring instruments/instruments, data collection techniques, and data analysis.

The type of research used in this study is quantitative, namely collecting, compiling, processing and analysing data in the form of numbers which in practice are given certain treatments that are studied in it.

The method used is a pre-experiment design pre-test and post-test one group design. In this study there was 1 group that began by measuring the pretest, and after the treatment was carried out post-test to determine the effect of providing health education on students' knowledge and attitudes about healthy snacks. The sampling technique in this study used Purposive Sampling technique. The approach used in this study was One Group Pre Test-Post Test Design, namely one experimental group and treatment measured the dependent variable (pre test) then given treatment then measured the dependent variable again (post test).

The population in this study were 5th grade students of SDN Mergosono 3 Malang City, totalling 30 students. The sample used in this study was the total population of 30 students. In this study, the technique used was purposive sampling technique. Purposive sampling is not based on strata, random, or region, but based on specific objectives. The criteria that must be met are:

a. Inclusion Criteria

- 1) All 5th grade students who are registered at SDN Mergosono 3 Malang City.
- 2) Willing to be a respondent in this study

- 3) Willing to fill out a questionnaire
- 4) Physically and mentally healthy
- b. Exclusion Criteria
  - 1) Students who are sick or absent from school
  - 2) Not willing to be a respondent

1. Type of Data

a) Primary Data

Data created by researchers for the specific purpose of solving the problems they are dealing with. The data is collected by the researcher himself directly from the first source or where the object of research is carried out by making observations of the research target to obtain data. In this study, the primary data collected were respondent identity data in the form of student names, gender, date of birth, age, class and questions related to health information. Then the pretest posttest questionnaire related to knowledge and behaviour about healthy snacks.

b) Secondary Data

Data that has been collected for purposes other than solving the problem at hand. This data can be found quickly. In this study, secondary data sources were books and journals related to the research conducted and diarrhoeal disease data from the Puskesmas Arjowinangun profile.

2. Data collection techniques

The data collection techniques in this study are:

a. Measuring

Using a questionnaire to measure knowledge and behaviour questionnaire with pretest posttest. Then the results of the pretest posttest questionnaire were calculated by means of:

1) Knowledge

True : 1 False : 0

$$\frac{True}{Total\ question} \times 100 = Score$$

- 1. Excelent (80-100)
- 2. Good (60-79)
- 3. Fair (<59)

2) Behavior

For positive answers if very often given a value of 4, often 3, sometimes 2, never 1. For negative answers if very often given a value of 1, often 2, sometimes 3, never 4.

Positive : Score > 50

Negative : Score ≤ 50

The instrument in this study is a questionnaire to measure knowledge and behaviour before and after being given treatment about healthy snacks, the form of questionnaire used in this study is a closed questionnaire with a total of 10 knowledge questions with answer items A, B, C and D. If the answer is correct it is given a score of 1 and for the wrong answer it is given a score of 0. Then the questionnaire questionnaire 15 behaviour, with answer items never, sometimes, often and very often. For positive behaviour, never was given a score of 1, sometimes 2, often 3 and very often 4. For negative behaviour, never was given a score of 4, sometimes 3, often 2 and very often 1 with a final score of positive behaviour = > 50 and negative behaviour = ≤ 50.

## Result

### 1. Respondent Characteristic

Respondent characteristics included gender, age, information and source of information. Data were presented using tables and explained with narratives.

**Table 1. Respondent Characteristic Based on Gender, Age and Source of Information Students Get About Healthy Snacks in 2023**

No.	Respondent Characteristic	Frequency	Percentage
1.	Gender		
	Male	13	43,3%
	Female	17	56,7%
2.	Age		
	11 years old	15	50%
	10 years old	15	50%
3.	Information		
	Ever	3	10%
	Never	27	90%
4.	Source of Information		
	Teacher	2	6,6%
	Health Worker	0	0
	Internet	1	3,4%
	Reading books, newspaper, etc	0	0

Based on table 1. it can be seen that out of 30 respondents, 13 respondents (almost half of the respondents) were male (43.3%) and 17 respondents (most of the respondents) were female (56.7%). Based on age, there were 15 respondents (half of the respondents) aged 10 years (50%) and 15 respondents (half of the respondents) aged 11 years (50%). Meanwhile, based on health information, 27 respondents (almost all of the respondents) had never received health information about healthy snacks and 3 respondents (very few of the respondents) had received information on healthy snacks. 2 respondents (very few of the respondents) get health information from teachers (6.6%) and 1 respondent (very few of the respondents) get health information from the internet 3.4%

### 2. Level Of Knowledge Of Grade V Students At SDN Mergosono 3 Malang City About Healthy Snacks Before And After Education.

**Table 2. Frequency distribution of knowledge of fifth grade students at SDN Mergosono 3 Malang City about healthy snacks before and after education in 2023.**

Level of Knowledge	Pre Test	%	Post Test	%
Excelent	13	43.3	30	100
Good	17	56.7	0	0
Fair	0	0	0	0
Total	30	100.0	30	100

The data in table 2. above is data from all respondents in this study where there is no grouping of respondents from gender or age because in this study only uses one group, namely class V SDN

Mergosono 3 Malang City. Based on the table above, it can be concluded that there is an increase in knowledge after education, namely in the good category at the time of the pretest there were 13 students (a small proportion of respondents) 43.3% while for the post test in the good category there was an increase of 30 students (all of the respondents) 100%. In the moderate category at the time of the pretest there were 17 students (most of the respondents) 56.7% while for the post test in the moderate category there were 0 students (none of the respondents) 0%. So it can be concluded that there are differences in knowledge before and after health education about healthy snacks.

**3. The level of behaviour of fifth grade students at SDN Mergosono 3 Malang City about healthy snacks before and after education.**

**Tabel 3. Frequency distribution of behaviour of fifth grade students at SDN Mergosono 3 Malang City about healthy snacks before and after education in 2023.**

Level of Knowledge	Pre Test	%	Post Test	%
Negative	30	100	0	0
Positive	0	0	30	100
Total	30	100.0	30	100

The data in table 3 above is data from all respondents in this study where there is no grouping of respondents from gender or age because in this study only uses one group, namely class V SDN Mergosono 3 Malang City. Based on the table above, it can be concluded that there was an increase in behaviour after education, namely in the positive category that there were no students who behaved positively, while during the post-test in the positive category it increased to 30 students behaving positively, namely 30 students. So it can be concluded that there are differences in behaviour before and after health education about healthy snacks.

The content of the research results reveals the findings of the research results based on field data obtained by questionnaires, surveys, documents, interviews, observations and other data collection techniques. The results at least contain elements of what/how whether the data presented has been processed (not raw data), poured in the form of tables or figures (choose one), as well as descriptive research and given a description that is easy to understand. Write down the findings or findings, but do not discuss the discussion here.

**4. The effect of education on students' knowledge and behaviour about healthy snacks**

*Wilcoxon Sign Ranked Knowledge Test*

**Tabel 1. Wilcoxon Sign Ranked Knowledge Test**

	Mean	Std. Deviation	P Value	N
Pre Test	52.00	11.567	0.000	30
Post Test	97.33	4.498	0.000	30

Based on table 6, the results of the statistical test of knowledge with the Wilcoxon Signed Rank Test on respondents obtained a sign value of 0.000 where ( $p < 0.05$ ) so that it can be said that there is an increase in knowledge after educating students about healthy snacks.

*Wilcoxon Sign Ranked Behavior Test*

**Tabel 2. Wilcoxon Sign Ranked Behavior Test**

	<b>Mean</b>	<b>Std. Deviation</b>	<b>P Value</b>	<b>N</b>
Pre Test	30.50	1.717	0.000	30
Post Test	58.57	0.679	0.000	30

Based on table 7, the results of the statistical test of behaviour with the Wilcoxon Signed Rank Test on respondents obtained a sign value of 0.000 where ( $p < 0.05$ ) so it can be concluded that H1 is accepted, namely there is an increase in behaviour towards the effect of education on healthy snacks at school.

## **Discussion**

After analyzing the data and examining the research using the Wilcoxon Signed Rank Test, the results varied regarding the knowledge and behaviour of school students regarding healthy snacks before and after education. So that the following discussion is needed:

### **1. Identification of Students Knowledge about Healthy Snacks Before Education**

Based on the results of the frequency distribution of knowledge of fifth grade students at SDN Mergosono 3 Malang City about healthy snacks before education, namely the good category at the time of the pretest there were 13 students (a small proportion of respondents) 43.3%, in the sufficient category there were 17 students (most of the respondents) 56.7%, while for the less category there were 0 students (none of the respondents) 0%. According to Notoatmojo (2012) in (6), knowledge is the result of knowing from humans who just answer the question 'what'. Knowledge is the result of knowing, and this happens after people perceive a certain object. Sensing, smell, taste, and touch. Knowledge or cognitive is a very important domain in shaping a person's actions (overt behaviour).

According to (7), one of the factors that influence knowledge is information. Information obtained from both formal and non-formal education can provide short-term knowledge resulting in changes and increases in knowledge. Based on the table of respondent characteristics, almost all of the respondents have never received health information about healthy snacks, the lack of information is one of the factors that cause respondents' knowledge to be in the poor category. Meanwhile, according to (8) educational methods and media such as lectures, leaflets, PPT and other methods are able to increase school children's knowledge regarding the selection of healthy snacks within a certain period of time as was done in this study, namely providing education with lecture methods using leaflet and PPT media.

### **2. Identification of Students' Knowledge about Healthy Snacks After Treatment**

Based on the results of the frequency distribution of knowledge of fifth grade students at SDN Mergosono 3 Malang City about healthy snacks after education using PPT media and leaflets, there was an increase, namely in the good category totalling 30 students 100%. Meanwhile, for the posttest in the moderately decreased category, there were 0 students (none of the respondents) 0%. So it can be concluded that there are differences in knowledge before and after health education about healthy snacks.

One of the things that can affect knowledge is information. Based on the table of respondent characteristics, almost all of the respondents have never received health information about healthy snacks. After education using PPT media and leaflets, respondents' knowledge increased. This is also in line with the opinion (7) in his research which states that this change can occur because there are

factors that influence it, namely according to Nursalam (2003) that education or education (health information) provided can affect a person's knowledge including his behaviour.

According to Bloom and Skinner, knowledge is a person's ability to re-express what he knows in the form of evidence of answers either oral or written as used in this study, namely using writing in the form of a questionnaire with closed questions. The written evidence or answer from the respondent is a reaction to stimulation in the form of questions both oral and written.

Education itself is an activity that encourages the addition of knowledge and changes in the behaviour of a person/group naturally (9). The definition of education according to M.J Langeveld in (10) Education is a learning process that aims to develop self-potential in students and realise a better learning process.

### **3. Identification of Student Behaviour About Healthy Snacks Before Treatment**

Based on the results of the frequency distribution of behaviour before treatment (pretest) positive category that none of the respondents behaved positively and negative behaviour of all 30 respondents 100%. One of the factors that influence respondents' behaviour is knowledge. The level of knowledge of respondents before education using PPT media and leaflets is still in the lower category, which proves that knowledge has an important influence on the behaviour of respondents in choosing snacks at school.

Health behaviour is a response (organism) to a stimulus or object related to illness and disease, the health care system, food and drink, and the environment. From this limitation, health maintenance behaviour occurs from 3 aspects including aspects of disease prevention behaviour, and disease healing when sick, and health restoration when recovered from illness (11). The aspect in this study is behaviour in disease prevention through education about healthy snacks. Education is very influential on student behaviour in choosing healthy snacks at school. Judging from the form of response to a stimulus, Notoatmodjo (2003) in (12) divides behaviour into two, namely closed behaviour and open behaviour.

In this study, researchers analysed closed behaviour where the respondent's response to the stimulus was in a veiled or closed form, namely using a questionnaire with a closed statement by ticking the statements that had been compiled with the choice of always, often, rarely and never on the questionnaire consisting of positive and negative statements. On positive statements if always given a score of 4, often 3, rarely 2, never 1 and negative statements are always given a score of 1, often 2, rarely 3 and never given a score of 4. If the score > 50 then it can be declared positive behaviour, if the score < 50 is declared negative behaviour.

### **4. Identifikasi Perilaku Siswa Tentang Jajanan Sehat Sesudah Dilakukan Perlakuan**

Based on the results of the frequency distribution of behaviour after education, it can be concluded that there was an increase in behaviour, namely at the time of the posttest in the positive category, it increased to 100% positive behaviour, namely all of the 30 student respondents. The increase in behaviour in respondents is due to increased knowledge where the results of respondents' knowledge after education using PPT media and leaflets are in the good category.

This change in respondent behaviour reinforces the opinion of Notoatmodjo (2012). Behaviour is a reflection of health which is the target of health promotion or education. In other words, health promotion or education aims to change behaviour (behaviour change) So it can be concluded that there are differences in behaviour before and after health education about healthy snacks.

The results of this study are in line with research (13) that knowledge and behaviour have changed, meaning that students have understood what was conveyed in this extension, causing good retention so that behaviour has increased. In line with research (14) that there were changes in the behaviour of respondents. The behaviour of respondents before health education 71.2% was still bad

and decreased to 46.2% which was bad, while good behaviour from 28.8% increased to 53.8%. This condition shows that better knowledge can affect behaviour for the better.

## **5. Analysis of the Effect of Education on Students' Knowledge and Behaviour about Healthy Snacks at School**

Based on the results of the Wilcoxon Test on respondents' knowledge, it can be concluded that the results of the pretest and posttest have changed knowledge from the previous one at the time of the pretest, the average knowledge of respondents was 52.00 where the value was in the poor category, because the value was  $< 59\%$ . Then after education using leaflets and PPT, the results of changes in knowledge increased, the average knowledge of respondents became 97.33, this value is in the good category where the value is  $> 80\%$ . So it can be concluded that there is an increase in knowledge after education about healthy snacks.

Meanwhile, based on the results of the Wilcoxon Test on respondents' behaviour, it can be concluded that the results of the pretest and posttest have changed behaviour from the previous one at the time of the pretest, the average behaviour of respondents was 30.50, this value is included in the negative behaviour category where the value is  $< 50$ . Then after education using leaflet media and PPT, the results of behaviour change were obtained. The average behaviour at the time of the posttest increased to 58.57, this value is included in the positive behaviour category where the value is  $> 50$ . So it can be concluded that there is an increase in behaviour after education about healthy snacks.

Based on the results of data using the Wilcoxon Test on the knowledge and behaviour of respondents in choosing healthy snacks, there is an increase after education using leaflet and PPT media. The results of the Wilcoxon Test show a value of 0.000 or P-value  $< 0.05$ , which means this study shows that there is an effect of education on the knowledge and behaviour of students in choosing healthy snacks at school.

With the increase in knowledge and behaviour, it can be concluded that education has an effect on changes in knowledge and behaviour. This shows that knowledge is a factor that supports respondents in choosing healthy snacks. According to Notoatmodjo (2010) in (15) in his research revealed that behaviour based on knowledge will be more lasting than behaviour that is not based on knowledge.

This study is also in line with the results of previous research conducted by (14) who examined the effect of health education on changes in knowledge and behaviour. The results of his research concluded that there was an effect of health education on increasing the knowledge and behaviour of respondents.

## **Conclusion**

Based on the research that has been done, it can be concluded that the characteristics in this study are mostly female, and most of the respondents have never received health information about healthy snacks. Respondents' knowledge before being given education about healthy snacks with the results of the category less. Then after being given education, the respondents' knowledge increased to the good category. Respondents' behaviour before being given education about healthy snacks with negative category results. Then after being given education, the respondent's behaviour increased to a positive category. There is an effect of education on changes in students' knowledge and behaviour about healthy snacks. It can be said that education is effective in increasing students' knowledge and behaviour about healthy snacks.



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