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RESEARCH

The Factors Influencing of Food Selection Behavior Among Students of Elementary School in Ngestiharjo Urban Village, Kasihan, Bantul

Dyah Suryani[1], Wibowo[2](corresponding author)
[1]Faculty of Public Health, Ahmad Dahlan University Yogyakarta, Indonesia
[2]Research and Development Center for Health Resources and Services, Ministry of Health, Indonesia
(wibowo869@yahoo.co.id)

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ABSTRACT

Background: Indonesia as developing country remains face the double burdens of health problem, including mal nutrition and obesity. Children as students of elementary school tend to consume snacks which may contains unhealthy ingredients affect to health. This study aimed to examine the factors influencing of food selection behavior among students of elementary school. **Methods**: This cross-sectional quantitative research was conducted in Ngestiharjo Urban Village, Kasihan, Bantul, Yogyakarta. The respondents were 162 students in 5th grade in age range 10-14 years old. The statistical test was done for univariate, bivariate (chi-square), and multivariate (regression test). **Results**: Majority of respondents were female students in aged 11 years old. The bivariate analysis found that knowledge, breakfast habits, and social environment had the association with food selection behavior while attitude was not. The multivariate test revealed that knowledge and social environment were statistically influence the food selection behavior (OR= 2.8, OR= 5.057, respectively). The most influencing factors was the social environment. **Conclusion**: Students need to be informed about the knowledge of healthy, nutrients, hygiene and safety food. Social environment needs to work together to encourage children to practice the good food selection behavior.
Keywords: Students, Food selection, Knowledge, Attitude, Social environment

INTRODUCTION

Nowadays, Indonesia is faced the double burden of health including malnutrition and excess nutrition (over weight and obese). Children in schooling period are still experiencing a growth and development phase so they need adequate nutrition.(1) The low level of snack safety of children remains a serious problem because it is related to the development of Indonesian human resources. The low quality of snacks in school can worsen the nutritional status of school children due to disruption of nutritional intake. The role of stakeholders including government, social elements, school's staff and children's family are needed to maintain, realize and monitor the safety, quality, and nutrition of food consumed by children.(2) Children in elementary school age are known as growing up period which need nutritional food. To fulfill the needs of energy and protein, Snacks for School Children (PJAS) is needed for children who did not have time for breakfast or did not bring the lunch. The contribution of PJAS nutrients fulfills 15 to 20% of daily nutritional which provided in school canteen and routinely consumed by children.(1)

Based on the Final Report of the Monitoring and Verification of the National PJAS Safety Profile in 2008, it showed that 98.9% of children were in school and only 1% had never been. Further data show that PJAS contains 31.06% of energy and 27.44% of protein from daily food consumption. Besides serving as a food source PJAS, it can also function as a breakfast food source. Data shows that nearly a half of students (52%) were in the category of had breakfast sometimes (≤ 3 times per week).(3) PJAS is important in terms as the effect of unavailability of breakfast and get up late. One research found that the children had the high level of knowledge in term of PJAS but just a few of them could practice to select the appropriate PJAS. One possible reason from that study was the limitation of suitable PJAS with the school environmental.(3) Generally, children spent one fourth of their time in school with the average allowance in ranges 2000IDR to 4000IDR daily and some even reach 7000IDR daily. It was estimated that only 5% of children bring lunch/snacks from home and the rest are exposed by street food.(4)

There are internal and external factors which influence the selection of snacks.(5) The internal factors including knowledge, in particular knowledge of nutrition, intelligence, perception, emotions and motivations. Nutrition knowledge is the skill to choose snacks that are a source of nutrients and the ability to choose healthy snacks. The attitude of a child is an important component that is influential in choosing snacks. Attitude is an evaluative response that can be either positive or negative. The environmental factors, motivation, and ability of

a person are mentioned as the three main determinants of healthy and unhealthy food selection behavior. [5] In 2017, there were 1,840 primary schools in DIY with 293,460 children. The very large number of elementary schools has its own challenges, for example providing healthy food for school students. School students should also be equipped with knowledge in choosing healthy snacks. The results of testing PJAS samples from elementary schools in the City / Regency in DIY based on chemical parameters and / or microbiological parameters of PJAS samples totaling 16 samples, showed that there were 12 eligible samples / TS (75%) and 4 samples did not meet the requirements / TMS (25%). The TMS sample consists of 3 chemical TMS samples and 1 micro TMS sample.[19]

Ngestiharjo Village is a village located on the border between Bantul Regency and Yogyakarta City. In the region there are 5 public elementary schools. At the elementary school the elementary school students were busy buying snacks both in the school canteen and at street vendors outside the school grounds. So, this study aims to determine the factors associated with the selection of snacks for elementary school students.

METHODS

This research was an analytic observational research with a cross-sectional approach. The population and sample in this study were all fifth-grade students of state elementary schools located in the Ngestiharjo Village, Kasihan Bantul. The sample were taken in grade 5th aged 10 to 14 years old because they could read and write and understand Indonesian. Samples were taken by random sampling with a total of 162 students. Data were taken using a knowledge questionnaire (11 questions), attitudes (8 questions), food selection behavior (8 questions) and social environment (9 questions) that had been tested for validity and reliability. Then the questionnaire score assessment category uses a median value, because the data were not normally distributed. Breakfast habits were categorized into often if student have breakfasted every day before leaving school and it was categorized into rarely if students do not have breakfast every day. The bivariate analysis was done by using the Chi-square test and multivariate analysis by the logistic regression tests.

RESULTS

Characteristics of Respondents

The 5th grade elementary school students were drawn from 5 public elementary schools in the Ngestiharjo Village, Kasihan Bantul, which have the following characteristics:

Table 1. Distribution of characteristics of grade 5th elementary school students by sex and age

Variable	Frequency	Percentage
Sex		
Male	78	48.1
Female	84	51.9
Age		
10 years old	6	3.7
11 years old	103	63.6
12 years old	38	23.5
13 years old	9	5.5
14 years old	6	3.7

More than a half percentage of respondent was female (51.9%) and the rest were male. It was seen that the distribution between male and female almost equally distributed. Majority of samples were 11 years old, following by 12 years old, 13 years old, and 10 and/14 years old.

Descriptive Analysis

The results of descriptive analysis of student's level of knowledge about food selection, student's attitudes about food selection, breakfast habits, social environment and food selection behavior are descripted in table 2.

Table 2. Distribution of levels of knowledge, attitudes, breakfast habits, social environment and behavior of respondents' selection of snacks

Variable	Frequency	Percentage
Knowledge		
Not good	54	33.3
Good	108	66.7
Attitude		
Not support	61	37.7
Support	101	63.3
Breakfast habits		
Rarely	48	29.6
Always	114	70.4
Social Environment		
Not good	62	38.3
Good	100	61.7
Behavior of respondent's selection of snacks		
Not good	42	25.9
Good	120	74.1

The descriptive analysis in this study found that more than a half of students had a good knowledge in terms of food selection (66.7%). Regarding attitude, more than a half of them were supporting the food selection (63.3%) while the rest were not. In terms of breakfast habits majority of students in this study had the routine breakfast every day (70.4%). From 162 students, 100 of them had the good social environment including parents, friends, and teachers. Almost three fourth of respondents had a good behavior of selection the snacks (74.1%). Generally, respondents had a good knowledge, attitude, behavior, and social environment in terms of breakfast and snack selection.

Bivariate Analysis

The results of the bivariate analysis were tested by using the Chi-square with a confidence level of 95% (table 3).

Table 3. Relationship between level of knowledge, attitudes, breakfast habits, social environment with behavior of food selection behavior in class 5th grade students

Independent Variables	Dependent Variable		RP/ CI (95%)	P-value
	Not good	Good		
Knowledge				
• Not good	22	32	2.200	0.004
• Good	20	88	(1.321-3.663)	
Attitude				
• Not support	20	41	1.505	0.173
• Support	22	79	(0.899-2.250)	
School environment				
• Not good	28	34	3.226	0.001
• Good	14	86	(1.847-5.635)	
Breakfast behavior				
• Rarely	18	30	1.781	0.047
• Always	24	90	(1.070-2.965)	

Chi-square statistical test results with a significance level of 95% obtained a value of RP = 2.200 (1.321-3.663) which means that students who had a bad level of knowledge will give the risk of choosing bad food-selection behavior by 2.2 times greater than students who had the good level of knowledge (p-value = 0.004).

There was a relationship between the school environment with the behavior of choosing snacks for elementary school students with a p-value of 0.001 with a value of RP 3.226 (1.847-5.635) which means that

students who had poor social environmental factors will risk making the behavior of choosing snacks that not good by 3.226 times greater than students who had good social environmental factors.

Students who had breakfast behavior rarely will risk doing bad food selection behavior by 1.781 times greater CI = (1.847-5.635) compared with students who had frequently breakfast habits (p value = 0.047).

Multivariate Analysis

There was more than one variable that was statistically related, so the analysis was continued to multivariate analysis with the logistic regression test to examine factors that have a stronger relationship to the behavior of food selection.

Table 4. Logistic regression test of knowledge and social environment with the food selection behavior

No.	Independent Variables	B	Wald	Sig	Exp (B)	CI 95%
1	Knowledge	1.028	6.488	0.011	2.795	1.267-6.164
2	Social Environment	1.621	16.286	0.000	5.057	2.302-11.111

Based on logistic regression analysis (Table 4), it was stated that the level of knowledge and social environment had a significant influence on the behavior of food selection among fifth grade elementary school students (p-value = 0.011). After adjusted to another independent variables, for students who had good knowledge, they were 2.8 times more likely to have good behavior of food selection. Regarding social environment, student had good social environment were 5.1 times more likely to have good behavior of food selection. According to those independent variables, social environment was the strongest influencer to behavior of food selection (p-value = 0.000).

DISCUSSION

The Relationship between the Level of Knowledge with the Behavior of Food Selection

This study shows that there was a relationship between the level of knowledge of students with the behavior of food selection with p-value = 0.004. It can be seen that based on the results, most of them had good knowledge. It is possible, because in the 5th grade curriculum there are Natural Sciences (IPA) subjects that have discussed healthy and safe food. Besides that, Kasihan Bantul Public Health Center is an active in providing related counseling about the characteristics of healthy snacks. According to previous research, stated that in addition to formal education, social networking is another key mechanism by which many people gain health knowledge.[6] Another research revealed that there was a lot of evidence showing that children in developing countries prefer to consume unhealthy foods due to lack of knowledge and wrong perceptions of healthy food. Children in their infancy should consume valuable and healthy foods. The long-term effect of unhealthy foods will be the risk for children in the future. Concerning the knowledge, the study conducted in Portuguese school canteens revealed that knowledge was influenced by age, motivation and training.[7] One of double burden in schooling age is obesity. Students who consumed more calories and lack of nutrients tend to be obese. Students need to be informed how to select the appropriate foods and healthy food. This study also supported the previous study which stated knowledge about nutrition was one of the causes of poor dietary habits.[8],[9] Another study found different things, knowledge was not the only one factors affect the dietary practices, there was attitude and behavior that also took a part.[10] The study in Lithiation school found that lack of knowledge and perception were the reasons of unhealthy food selection in developing countries.[20] Additionally, study conducted in Selangor, Malaysia also found that personal hygiene knowledge had slightly positive relationship with food handlers.[22],[23] In line with previous 2 studies, the knowledge of food handlers was also important even though students in this study was the respondents. It may because of lack knowledge in terms of kitchen equipment, hygiene/sanitation condition and handling practices.[24]

The relationship between students' attitudes with food selection behavior

Based on the results of this study it was found that students' attitudes about the choice of snacks had no association do with behavior (p = 0.173). This shows that although the attitude of students is more supportive about choosing healthy snacks, it was not necessarily followed by good behavior. A person's attitude can be

formed because of the interaction between each individual. Attitudes can be both positive and negative. Where the attitude of students in choosing food can be formed from the knowledge they have, culture, other people who are considered important, the mass media, educational institutions where children study and emotional factors from within the individual itself. Another possible reason is the presence of cafeteria where selling snacks. If the school canteen sells unhealthy food, then school students have no other choice, and finally buy the unhealthy food. Attitude is a fundamental component of behavioral motivation and defined in terms of the overall evaluation of people (beneficial or unprofitable) in carrying out a behavior.[11] The practice of selecting snacks among children is characterized by excessive consumption of fast food and sugary drinks, an indicators of unhealthy food choices. The possible main reason for consuming these foods because of sweet taste and ease of accessibility, lack of knowledge and negative attitudes. [12] Additionally, the attitude of food handles was also important because hygiene working practices when preparing food was the risk factor of contamination *E. coli* in school canteen. [21] The attitudes of food handles were also mentioned by study in Vietnam which found that attitude is the most affecting factor in food selection.[23]

The Relationship between the Social Environment with the Behavior of Food Selection

The results of this study found a relationship between the school environment with the behavior of choosing snacks for elementary school students with a p-value of 0.001 which means that students who have bad social environmental factors will be risky for choosing bad snacks is 3,226 times greater than students who have good social environmental factors. The social environment in this study has a meaning the peer factor, teacher and parent factors. It is seen that the environment around students greatly influences student behavior. The influence of peers is a social factor that also influences the selection of snacks. Imitating or studying the habits of peers influences decision making in choosing snacks. Parents can provide the healthy food at home, so their children will be imitated when they are at school. School-age children spend more time with their parents until parents have a stronger influence. Furthermore, the influence of friends and communication media becomes the second effect. [13] State that the family environment has the potential to influence and improve good dietary practices because children tend to imitate the practices of their parents.[3] Recent research with a sample of Irish children shows that parents are the main influencers in their children's diets and the frequency of eating together has a positive effect on children's food knowledge.[14] Children could be motivated to select healthy food based on their environment and self-capacity.[18] Study in Bahrain found that the process of transferring food to school cafeteria still needs attention from school staff which may contaminated by hands of food workers, utensils, and cloths and sponges used for wiping.[25]

The relationship between breakfast habits with the behavior of food selection

There was a significant relationship between breakfast habits with the behavior of choosing snacks for grade 5^{th} elementary school students with a value of sig = 0.047. From this study, there were still 48 students who rarely breakfasted before leaving for school. They reported the reasons were the oversleep, their family does not have the breakfast's habit, nauseous or other stomach problems. Children who skipped the breakfast time will tend to consume more snack. It was supported by study conducted in Semarang which revealed that children were 1.5 times more likely to consume more snacks if they skipped the breakfast.[15] Unhealthy snacks may contain more calorie so it will be the risk of obesity.[16] The importance of breakfast may reflect that school snack is one of children's favorite food which could be determine the nutritional ingredients consumed by children (Indonesian future generation).[17]

CONCLUSION

Majority of respondents were female students in age 11 years old. The univariate analysis revealed that most of respondents had a good knowledge, did a good attitude, routinely had breakfast habits, had a good social environment, and practiced good behavior in terms of selection of snacks. The bivariate analysis found that knowledge, social environment and breakfast habit had the association with selection of snacks. The multivariate analysis found the social environment and knowledge statistically influenced the snacks selection. Specifically, social environment was the most influencing factor to snacks selection.

Children need a good supporting environment to practice a good selection of food. Work together between teachers, parents, family, food handlers and friends can be effective to encourage student to select healthy food. Each of them takes a role to inform and give knowledge to children how to select healthy food and nutrition food.

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