THE CORRELATION BETWEEN KNOWLEDGE AND FOOD SELECTION PRACTICES AND HAZARDOUS SUBSTANCES AMONG JUNIOR HIGH SCHOOL STUDENTS

Cindy Zerlina Artanti[1], Linda Dewanti[2], Ira Dharmawati[3]
[1]Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia
[2]Department of Public Health, Faculty of Medicine Universitas Airlangga, Surabaya, Indonesia
[3]Department of Pediatric, Faculty of Medicine Universitas Airlangga, Dr. Soetomo General Hospital¸ Surabaya, Indonesia
Correspondence Address: Linda Dewanti
Email: lindaperisdiono@yahoo.com

ABSTRACT

Introduction: There are many cases of food poisoning in Surabaya. Furthermore, there are also many food vendors around the school and canteen using hazardous substances which can cause food poisoning. The aim of this study was to analyze the association between knowledge and food selection practices among students at one of junior high schools in East Surabaya towards hazardous substances. **Methods:** The methods of this is an analytic-observational study with a cross-sectional design which used primary data from the student who fills out the questionnaire. The study sample includes 119 students at junior high school 19 Surabaya, Indonesia, range of age 12-14 years old. The dependent variable in this study food selection practices, the independent variable was level of knowledge of hazardous substances. The study used 4 questionnaires to collect the data. Data collection was carried out in December 2019, this study used simple random sampling and the data analyzed by Chi-Square Test. **Result:** The results of this research showed that 52.9% of students have knowledge category 'moderate' and 47% of students 'food selection practices' category 'correct'. This research showed that there was no significant correlation between knowledge and food selection practices. **Conclusion:** The conclusion of this study there was no significant correlation between knowledge and food selection practices towards on hazardous substances, it must another factor that could be affected the decision of adolescents.

Keywords: food poisoning, food selection, knowledge, food vendor, hazardous substances, schoolchildren

INTRODUCTION

Food is an essentials need for humans to live, but in some cases, there is content from food that is not appropriate and can cause disturbances in human body functions such as food poisoning, diarrhea, and cancer (Sari, 2017). There have been several outbreaks (KLB; Kejadian Luar Biasa) of food poisoning in Indonesia, and one of them occurred in 1997 in Program Makanan Tambahan Anak Sekolah (PMTAS), which caused many deaths (Supraptini, 2002). Furthermore, food poisoning can be caused by contamination from chemicals, viruses, parasites, and microorganisms such as bacteria (Sari, 2017). In the Surabaya city, from the results of the (National Agency of Drug and Food Control, 2018) annual report, there were 83 cases of food poisoning, including those caused by chemicals, food, animals. According to BPOM (National Agency of Drug and Food Control), hazardous and toxic materials often found include formalin, borax, methanyl yellow, and Rhodamine B.

Based on the other study, there are still many harmful ingredients found in the snack by food vendors around the school that can potentially cause food poisoning. Furthermore, BPOM (National Agency of Drug and Food Control) carried out sampling and testing of food in the elementary schools spread across 30 cities in Indonesia in 2011. The result was 35% of the samples did not maintain food safety and ingredients quality (Paratmanitya and Aprilia, 2016). According to the study from Paratmanitya & Aprilia, which also tested food from food vendors around an elementary school in Bantul city, stated that the content of borax, formalin, and rhodamine-B had a high proportion and

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higher than the results of a survey by BPOM (National Agency of Drug and Food Control). According to another similar study which also tested food by food vendors around an elementary school in Samarinda city, there were formalin and borax contamination in food samples, as well as the contamination of Coliform bacteria in the food around the elementary school environment (Anton, Yearsi and Habibi, 2019).

One of the factors that influence food vendors to use hazardous chemicals inside the food according to BPOM (National Agency of Drug and Food Control) is to increase personal benefits by reducing the purchase price of the ingredients. Another factor that influence food vendors to use harmful stain are the attitude of the food vendors (Miratania and Rahmalia, 2019). This statement was supported with the other study about 'the use of red coloring agents in street vendors in Medan'. It was stated that the food vendors attitude towards stain were bad (87,5%) (Elfira, 2018). Furthermore, based on the other study about the use of prohibited substances and preservatives is in a bad category (65.5%) (Pramastuty, Raharjo and Hanani, 2017).

Another problem is students (adolescents) who have snack eating habits at school (Purtiantini, 2010). When the students are in the school, the students are between morning and lunchtime and at this time causes hunger and this hunger often arises, which prompts the students to buy snacks to eliminate hunger (Aprillia, 2011). This statement was supported based on the study by (Putra, 2009); and (Wowor, Engkeng and Kalesaran, 2018) which state that adolescents are often not taking breakfast and not taking a packed meal from home. Meanwhile, most students buy food based on its attractive appearance (Triasari, 2015). According to other studies, well-informed respondents in the sample of research do not necessarily have good behavior in food selection practices (Purtiantini, 2010).

Based on the data above, it is crucial to do research that has different study with other study did which the other study only about to explain the correlation between knowledge and food selection practice of adolescents. However, in this study, we also consider the existence of the priority of selection practice by students and the reality of conditions for it due to the possibility that besides the level of knowledge, other factors might influence food selection practices, which the other study did not consider it. The results of this study might have advantages in preventing food poisoning in Surabaya, which is still relatively high. The results of this study have the possibility to become a reference for the government in improving food safety, especially in school areas in Surabaya.

METHODS

This study was an analytic observational study with a cross-sectional design. The research population was all students in Junior High School 19 Surabaya.

There are eleven junior high schools by the government program and around eight junior high schools by the non-government program. This research chooses Junior High School 19 Surabaya by considering its location, which is in the middle of East Surabaya, and the number of students, which is relatively high than the other school in East Surabaya. The samples were students, especially 7th and 8th grade based on the requests from the school as well as considerations that students in grade 9 in junior high school have a heavier load of school material due to exams prepations. As a result, 960 inclusion samples were obtained. The number of sample collected is based on the calculation of the Slovin formula as follows:

$$n = \frac{N}{1 + N\,e^2}$$

Based on the calculation above, the result showed that the required research samples were 93 people. The inclusion criteria of this study include the students who agree as research subjects and get approval from the student's guardian to fill out all the questionnaires honestly and adequately. The exclusion criteria of this research study include the absent and sick subjects. The sampling technique of the study was simple random sampling. The subject was taken randomly after the overall sample size was set. The sample size was measured by drawing a lottery in 4 classes with details of 2 classes from class 7 and 2 classes from class 8. To anticipate the corrupted data, samples that should have been 93 people were increased to 119 people to anticipate the corrupted data.

The obtained data sources included primary data and the instrument of this research using a questionnaire checked against the validity and reliability values. The results of the questionnaire validity were obtained above the minimum value of r table for 36 people (0.2785), while the reliability was obtained values above 0.6 on the questionnaire for the level of knowledge and food selection practices. This questionnaire consists of 20 questions level of knowledge, 15 questions on priority food selection, five questions on food selection practices, and five questions about the reality types of food that are often bought in the school.

The data were collected in December 2019 in a junior high school in East Surabaya. There were two variables in this study; the dependent variable, i.e., food selection practices, and the independent variable (knowledge of hazardous substances). These variables are classified from the questionnaire scores for each student based on the independent and dependent variables into three categories. The cut of point of three categories (Good, Moderate, and Less) based on descriptive analysis from the results questionnaire scores by calculating the mean, median, mode, standard deviation, and class range, then determining the tendency of the variables by calculating the ideal mean and the ideal standard deviation and from these calculations can be continued by categorizing students into three categories for each variable; Good, Moderate, and Poor.

Data processing was undertaken using descriptive analysis techniques and qualitative analysis. This technique transcribes raw data from observations. Data were processed through several stages: editing, coding, data entry, and cleaning. The analysis used in this study is univariate analysis to determine the characteristics of respondents and categorization, and bivariate analysis using Chi-square square with a significance level of 95%. The data that has been analyzed with IBM SPSS Statistic 25 are presented in tabular and narrative form to determine the relationship between knowledge and the practice of food selection. This study was ethically approved by the Health Research Ethics Committee Universitas Airlangga School of Medicine No: 45/EC/KEPK/FKUA/2020.

Table 1. Characteristic of Respondents

Variable	(n)	(%)
Sex		
Male	59	49.60
Female	60	50.40
Age (years)		
12	22	18.50
13	67	56.30
14	30	25.20

Knowledge of Hazardous Substances		
Poor	30	25.20
Moderate	63	52.90
Good	26	21.80
Food Selection Practices		
Poor	32	26.90
Moderate	31	26.10
Correct	56	47.00
Total	119	100.00

Table 3. The Reality of Selection Practices

Variable	(n)	(%)
Reality of Frequently Purchased Food Types		
Cold drinks	46	38.60
Noodles	26	21.80
Rice and side dish	22	18.40
Milk	03	2.50
Meatballs/ Siomay	15	12.60
Chicken porridge	02	1.60
Fried food	02	1.60
Snack	03	2.50
Reality of Reasons for Frequently Purchased Food Types		
Delicious	44	37.00
Cheap prices	18	15.00
The price cheap and delicious	17	14.00
Nutritious	11	9.00
Kind of favorites food	19	16.00
Kind of favorites drink	05	4.00
Good hygiene	02	2.00
Other choice (which the respondents write by itself)	03	3.00
Total	119	100.00

Table 2. The Main Priority Food Selection Practices

Variable	(n)	(%)
Food Selection Practices		
Prices	20	16.80
Taste	26	21.80
Nutritious	47	39.50
Favorites food	05	4.20
Shape of food	03	2.50
Available menu	03	2.50
Personal experience	06	5.00
Quality of water used for washing tableware	05	4.20
Other choice (which the respondents write by itself)	04	3.40

Food Selection Practices (If The Prices are The Same)		
Prices	04	3.40
Favorites food	20	16.80
Taste	31	26.10
Nutritious	38	31.90
Shape of food	04	3.40
Available menu	12	10.10
Personal experience	04	3.40
Quality of water used for washing tableware	06	5.00
Reasoning Not Buying Food		
Water used by vendors to wash food utensils, dirty	31	26.10
Poor sanitation of food vendors location	26	21.80
Expensive prices	20	16.80
Taste not delicious	15	12.60
Not kind of favorite food	05	4.20
Personal experience	06	5.00
Shape of food are not good	02	1.70
The seller's treatment of food not using tools	12	10.10
Other choice (which the respondents write by itself)	02	1.70
Frequently Purchased Food Types		
Cold drinks	34	28.60
Rice and side dishes	22	18.50
Snack	17	14.30
Milk	14	11.80
Noodles	11	9.20
Fried food	12	10.10
Candy and chocolate	07	5.90
Meatballs and sauce	01	0.80
Other choice (which the respondents write by itself)	01	0.80
Reasons for Frequently Purchased Food Types		
Delicious	34	28.60
Cheap Prices	24	20.20
Good nutrition	29	24.40
Shape of food	01	0.80
Kind of favorite food	15	12.60
Available menu	03	2.50
Personal Experience	02	1.70
Good hygiene	07	5.90
Other choice (which the respondents write by itself)	04	3.40
Total	119	100.00

Table 4. Correlation between Level of Knowledge of Hazardous and Toxic and Food Selection Practices

Characteristic	**Level of Knowledge of Hazardous and Toxic**						**Total**		***p value***
	Less		**Moderate**		**Good**				
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	
Food Selection Practices									
Poor	8	25.00	19	59.40	5	15.60	32	100.00	
Moderate	7	22.60	19	61.30	5	16.10	31	100.00	0.446

Correct	15	26.80	25	44.60	16	28.60	56	100.00
Total	30	25.20	63	52.90	26	21.80	119	100.00

RESULT

Characteristic of Respondents

Table 1 showed that most respondents were female (60 respondents, 50.4%). Respondents were between 12- to 14-year-old. Most are 13 years old (67 respondents, 56.3%). The results showed that from three categories of level knowledge of hazardous substances, the most are category 'moderate' (63 respondents, 52.9%), and the results showed that from three categories of food selection practices, the most is category 'Correct' (56 respondents, 47%; see Table 1).

The Main Priority Food Selection Practice

Based on Table 2, there is also some questionnaire about the main priority of 'food selection practice' as additional data. Most students showed that they have the main priority of food selection practices: 'nutritious' (47 respondents, 39.5%); food selection practices if the prices are the same: 'nutritious' (38 respondents, 31.9%); in reasoning not buying food because 'water used by vendors to wash food utensils, dirty' (31 respondents, 26.1%); frequently purchased food types: 'cold drinks' (34 respondents, 28.6%), and reasons for frequently purchased food types: 'delicious' (34 respondents, 28.6%; see Table 2).

The Reality of Selection Practices

Based on Table 3, there are also some questionnaires about the reality of food selection practice by 'self-filling; non-multiple choice' as additional data. The majority of students from this research showed that have 'the reality of frequently purchased food types' category 'cold drinks' (46 respondents, 39%), the priority of reasons for frequently purchased food types' category 'delicious' (44 respondents, 37%; see Table 3).

The result from the statistics showed that there was no significant correlation between the level of knowledge of hazardous substances with food selection practices, with a p-value of 0.446; Table 4.

DISCUSSION

Description of Level of Knowledge

This study shows that the dominant level of knowledge is the 'Good' category. According to the other study that is in line with the results of this study regarding the level of knowledge about snacks undertaken by (Purtiantini, 2010) with the cross-sectional on 58 elementary students in Kartasura in 2010, it found that 96.6% had a good level of knowledge and 3.4% had a bad level of knowledge. However, from the results of these studies, there are differences in comparing the number of categories of knowledge level. In this study, there are three categories used: poor, moderate, and good. Meanwhile, the research conducted by Purtiantini used two categories: good and bad. Purtiantini stated that the knowledge of respondents who are dominated by the good category is probably caused by the sampling location in urban areas so that the students can easily access information sources. In addition, it can also be caused by the subject matter provided at school that can support more information because the sampling was undertaken at one of the high-quality private schools.

The results of this study are also supported by other research by (Syahputra, 2018) with a descriptive research design on 180 students from two elementary schools in North Labuhan Batu, state that in the

second elementary school the student dominated by ‘good’ level of knowledge.

The level of knowledge can be divided into two factors: internal factors and external factors. Internal factors come from oneself; based on life experiences, and external factors are derived from knowledge gained by others, including family and teachers (Purtiantini, 2010). According to other literature, internal factors can come from education, profession, and age, while external factors can come from environmental and social factors (Fitriani and Andriyani, 2015).

There are also factors associated with a person's lack of knowledge: lack of exposure to information, lack of memory/memorization skills, misinterpreting information, cognitive limitations, lack of interest in learning, and unfamiliarity with information sources (Syahputra, 2018).

Description Of Food Selection Practices

This study shows that the result of the dominant food selection practice is the 'correct' category. According to the other study that is in line with the results of this study regarding the practice of choosing food by (Alvionesty, 2018) on 335 elementary school students in Tanjung Senang District, Bandar Lampung, stated that the student dominated by 'good' food selection practice. However, from the results of these studies, there are differences in the comparison of the number of categories of food selection practices in both studies. In this study, there are three categories used; not correct, moderate, and correct.

Meanwhile, the research conducted by (Alvionesty, 2018) used two categories; good and bad. This statement also supported by study by (Febryanto, 2017) with the cross-sectional method on 86 elementary school students in Jombang, stating that the student dominated by positive categories of food selection practices. Similar to the discussion of previous studies, there are differences in the category of selection practice in both studies. In this study, there are three categories used; not correct, moderate, and correct. Meanwhile, (Febryanto, 2017) research used two categories; positive and negative. Another study that supports this study by (Syahputra, 2018) with a descriptive research design on 180 students from two elementary schools in North Labuhan Batu. While in the second elementary school, the results of the research were not in line with this research, but the percentage difference between good and moderate was measly.

Food selection practices can be divided into internal and external factors. These internal factors include knowledge, especially about nutrition, intelligence, perception, emotions, and motivation from outside. Another factor that influences the choice of food is the socioeconomic status of the person; pocket money can determine a child's behavior in choosing food to snack on because healthy food is usually more expensive (Notoatmodjo, 2003). Another factor that may also play a role in food selection is the condition of a person's eating habits in choosing, consuming, and using the available food, which is based on the socio-cultural background in which they live. Most school-age children have a habit of eating snack foods, and this snacking habit tends to become a habit or culture in a family (Purtiantini, 2010).

The Main Priority of Food Selection Practices

The data from this questionnaire are additional data to support the results of knowledge about hazardous substances with food selection practices.

Food Selection Practices

According to the results of this study, it is shown that students who choose the main priority based on nutrition have a dominant number. These results are supported with the statement by (Notoatmodjo, 2003) on the discussion of

factors that influence food selection based on internal factors, especially nutritional knowledge, and social and economic status plays a role in food selection and eating habits of a person according to (Purtiantini, 2010).

Food Selection Practices If The Prices are The Same

This study uses the type of question as in the previous discussion, but there are examples of price categories that are the same. From the results of this study, there was a decrease in the dominant number in the nutrition category by 9 respondents, and in the taste category there was an increase by 5 respondents, and in the category of favorite food types there was an increase by 15 respondents. The results of this study are in line with the theory according to (Notoatmodjo, 2003) which states that social and economic status plays a role in food selection and in accordance with other literature according to (Purtiantini, 2010) which states that eating habits also play a role in selection someone's food.

Reasoning Not Buying Food

The results of this study are in line with the study by (Purtiantini, 2010), which states that supportive attitudes in elementary school students have a more significant number (60.3%) than unsupportive attitudes (30.7%). This is also in support of the study by (Ratnawati, Arundina and Hadi, 2015) which stated that elementary school students' knowledge about hygiene is moderate and the knowledge of sanitation and nutrition are good.

Based on another study by (Nathalia and Vakol, 2019) does not support the statement before by (Ratnawati, Arundina and Hadi, 2015), s who stated that the knowledge of personal hygiene of elementary students is dominated by category 'less.' The different results of the study supported with internal and external factors could involve into the students.

Frequently Purchased Food Types

The results of this study are in line with research by (Iklima, 2017); regarding the frequently consumed snack conducted on 110 elementary school students in Bandung. From the study, it was found that 65 respondents (59.3%) chose the type of food in the category of flavored drinks; the flavored drink category that is meant in this study is 'cold drinks without brands that are made and served in various attractive colors' (Iklima, 2017). This is following the research results that gave the most dominant results were 'cold drinks.'

The results of the research in the form of food that entirely dominates after 'cold drinks' are heavy foods (rice and side dishes), according to (Aprillia, 2011) when an adolescent is in school the child is between morning and lunchtime so that the adolescents often get hunger and this hunger caused students to buy snacks for eliminating hunger. This is supported by the study from (Putra, 2009) on 78 elementary school students in Semarang city. The results showed that 60 respondents (77.9%) bought food to reduce hunger.

Reasons for Frequently Purchased Food Types

The results of this study state that the dominant reason chosen is the delicious taste category. This is following the results of research by (Putra, 2009) on 78 elementary school students in the city of Semarang. The results showed that the most reason chosen was reducing hunger. It was also supported by research from (Aprillia, 2011) stating that when the students are in the school, the students are between morning and lunchtime and at this time often causes hunger and this hunger are often arises which prompts the students to buy snacks to eliminating hunger. As well as the results of the research according to Putra in the category of reasons for purchasing food followed by the category of good taste by 24 respondents and the price was low by 21 respondents. This is

also supported with previous literature regarding the factors that influence food selection practices according to (Purtiantini, 2010) and (Notoatmodjo, 2003).

Reality of Frequently Purchased Food Types

The comparison of the results on the main priority of 'Frequently Purchased Food Types' categories 'cold drinks' and 'heavy foods' (rice and side dishes) is not much different from the previous results based on the choice of answers. However, there was a decrease in the number of categories of milk from the previous results of 11 respondents and an increase in the categories of noodles by 15 respondents. Data shows that there is an uncertainty in choosing the choice of answers between the manner that are prioritized to the conditions the respondent might face.

The results of this study are still in line with the results of research conducted (Iklima, 2017) which states that 'flavored drinks' have the highest number of respondents. Meanwhile, according to (Putra, 2009) types of noodles and rice are examples of the heavy food category. So this study supports the results of study by (Putra, 2009), that most students buy food to reduce hunger.

Reality of Reasons for Frequently Purchased Food Types

According to this data, it was found that a decrease in the number of respondents from the primary priority data for 'the reasons for choosing food' in the nutrition category was 18 respondents, who previously this category was the dominant choice category after the 'taste' category. In the category of good taste and low price, it is the dominant category chosen, and this is in line with the results of previous research regarding the main priority of food types in general, although the number of respondents has increased quite a lot.

The comparison of these results indicates a discrepancy in the practice and priorities chosen by the respondents. Another study that supports the results of this study is research by (Purtiantini, 2010) which states that "the attitude of the respondent who supports it does not necessarily have good behavior in choosing food." Moreover, this is in line with the previous literature regarding factors that influence the practice of choosing food (Notoatmodjo, 2003).

The Correlation between Knowledge and Food Selection Practices

In this study, no dominant data were found and the results of categorization on the number of respondents were not much different in each category. This shows that there is no pattern of correlation trends between knowledge and practice of food selection. This is reinforced by the results of the correlation test using the Chi Square Test with a p value of 0.446. This value is greater than 0.05. This means that there is no significant relationship between knowledge and practice of food selection in one of the junior high schools in East Surabaya.

Another study that supports the results of this study was by (Purtiantini, 2010) which was undertaken with a cross-sectional method on 58 elementary school students in Kartasura. It was stated that there was no correlation between adolescent's knowledge about food selection and adolescent's behavior in choosing food with p = 0.185. The study revealed that "the manner of respondents who are supportive does not necessarily have good behavior in choosing food and respondents who are knowledgeable do not necessarily have good behavior in choosing foods" (Purtiantini, 2010).

As for other studies that do not support the results of this study by (Alvionesty, 2018) on 335 elementary school students in Bandar Lampung who stated that there was a relationship / correlation between knowledge about the

selection of snacks and the behavior of students choosing food, amounting to 0.165. This shows that the level of closeness of the relationship is there but very low (Alvionesty, 2018).

Another study that support the results of this study but with different age ranges, by (Suswanti, 2015) on 181 medical and public health students in the city of Jakarta, stated that there is no correlation between knowledge and food selection with p value = 0.570. Another study that supports the results of this study by also having an age range, by (Maharibe, Kawengian and Bolang, 2014) which stated that there was no significant relationship between knowledge of balanced nutrition and balanced nutrition practices of students of the University Medical Education study program in Manado city.

Based on the data obtained from the results, some changes in food selection practices based on priority; these changes include when the questionnaire questions lead to several conditions such as the same price for the snacks purchased, against as a reality condition, and a general description of buying a food purchased. This is supported by the statement from (Purtiantini, 2010), attitude is not equal to action but a predisposition of action or practice. A good attitude does not necessarily lead to action or constitutes good practice. Therefore, the existence of good priorities for students is not a guarantee that in practice it will be good too.

According to (Notoatmodjo, 2003), factors that influence food selection and level of knowledge: internal and external factors; including experience, education level, belief, facilities, income, and socio-culture. According to (Purtiantini, 2010), those factors can affect the knowledge. According to (Fitriani and Andriyani, 2015), there are factors that affect the knowledge and these factors consist of internal factors including education, occupation, and age. In addition, external factors including the environment and socio-culture.

Meanwhile, according to (Purtiantini, 2010), mass media can be another factor that affects children's knowledge in choosing food. Food that is broadcasted in the mass media becomes popular and gives the effect of attraction to children even though the food can be unhealthy. This is also supported by study of (Higgs and Thomas, 2016) which states that social influence might be important factors regarding obesity.

According to (Notoatmodjo, 2003), factors that influence the formation of behavior can be divided into two factors: internal factors and external factors. Internal factors consist of knowledge, intelligence, perception, emotions, motivation and so on, which function to process external stimuli. Meanwhile, external factors consist of the surrounding environment, both physical and non-physical, such as climate, humans, socio-economy, culture, and so on. Furthermore, according to (Purtiantini, 2010), there are genetic or endogenous factors originating from individuals, consisting of race, gender, physical characteristics, personality traits, innate talents, and intelligence.

According to (Nozue et al., 2016) the selection of children's food intake is also based on children's habits in preparing their food. The results based on the reasons for choosing food stated that good taste and low prices were the dominant reasons chosen. These results are different from the study by (Vecchio et al., 2019) who conducted research in Southern Italy regarding people's choice patterns of bitter food, which states that people in Italy have a habit of prioritizing health in the chosen diet so that the taste bitter is no reason not to choose these foods. (Vecchio et al., 2019) stated in his research that people who received a bitter taste in dominant foods had good knowledge of nutrition, so they prioritized nutritional factors over taste.

Research Limitations

In this study, the amount of money given to the adolescents was not considered. In addition, this study did not ask about the parents' salary and the latest education of the parents. Therefore, it could no longer map out the criteria for respondents, and the age of the respondent was the age of adolescents who had the possibility of still having difficulty understanding the questionnaire and possibly not being fixed in answering the questionnaire.

Future research with asking more about characteristics of respondents such as the parents' salary, the latest education of the parents s is needed to get a better and more comprehensive insight about the correlation between the level of knowledge and food selection practices based on hazardous substances in the school canteen.

CONCLUSION

Based on the result of this study, most Junior High School students have the knowledge category 'moderate' and food selection practices category 'correct.' There was no correlation between knowledge and food selection practices based on hazardous substances (p-value = 0.446). There was no difference between knowledge and food selection practices based on sex.

Based on the priority and the real conditions of the questionnaire, it can be seen that some changes in the results of food selection practices are based on the main priority. These changes include when the questionnaire questions lead to several conditions such as the same price for the snacks purchased and against as a real condition. Most students bought snacks based on the good taste and the price on the reality. Moreover, it is shown that even they have a 'moderate' level of knowledge categories and 'correct' food selection practices categories, there is still a possibility that these students do not demonstrate appropriate practices due to other factors such as priorities and existing reality conditions such as prices, taste, type of food.

The results of this study also follow the explanation in discussing the factors that influence the level of knowledge and practice of food selection by internal and external factors. This study used a priority questionnaire and the existing conditions of reality.

REFERENCES

Alvionesty, F.J., 2018. *Analisis Hubungan Pengetahuan Dan Sikap Anak Terhadap Perilaku Memilih Pangan Jajanan Anak Sekolah (Pjas)*. Universitas Lampung.

Anton, L., Yearsi, S.E.N. And Habibi, M., 2019. Identifikasi Kandungan Berbahaya Jajanan Anak Sekolah Dasar SDN A Dan SDN B Kota Samarinda Tahun 2018. *KESMAS UWIGAMA: Jurnal Kesehatan Masyarakat*, 5. https://doi.org/10.24903/kujkm.v5i1.828

Aprillia, B.A., 2011. *Faktor Yang Berhubungan Dengan Pemilihan Makanan Jajanan Pada Anak Sekolah Dasar*. Universitas Diponegoro.

Elfira, D., 2018. *Tingkat Pengetahuan Sikap Dan Tindakan Pedagang Serta Analisis Kandungan Zat Pewarna Merah Pada Bubuk Cabai Dalam Makanan Jajanan Di Kelurahan Padang Bulan Kecamatan Medan Baru Tahun 2018*. Institusi Universitas Sumatera Utara (RI-USU).

Febryanto, M.A.B., 2017. Hubungan Antara Pengetahuan Dan Sikap Dengan Perilaku Konsumsi Jajanan Di Mi Sulaimaniyah Jombang. *Jurnal Ilmiah Kebidanan*, 3.

Fitriani, N.L. And Andriyani, S., 2015. Hubungan Antara Pengetahuan Dengan Sikap Anak Usia Sekolah Akhir (10-12 Tahun) Tentang Makanan Jajanan Di Sd Negeri Ii

Tagog Apu Padalarang Kabupaten Bandung Barat Tahun 2015. *Jurnal Pendidikan Keperawatan Indonesia*, 1. https://doi.org/10.17509/jpki.v1i1.1184

Higgs, S. And Thomas, J., 2016. Social Influences On Eating. *Current Opinion In Behavioral Sciences*, [Online] 9, Pp.1–6. https://doi.org/10.1016/j.cobeha.2015.10.005

Iklima, N., 2017. Gambaran Pemilihan Makanan Jajanan Pada Anak Usia Sekolah Dasar. *Jurnal Keperawatan BSI*, 5. https://doi.org/10.31311/.v5i1.1774

Maharibe, C.C., Kawengian, S.E.S. And Bolang, A.S.L., 2014. Hubungan Pengetahuan Gizi Seimbang Dengan Praktik Gizi Seimbang Mahasiswa Program Studi Pendidikan Dokter Angkatan 2013 Fakultas Kedokteran Universitas Sam Ratulangi. https://doi.org/10.35790/EBM.2.1.2014.3711

Miratania, Y. And Rahmalia, D., 2019. Faktor-Faktor Yang Berhubungan Dengan Perilaku Pedagang Dalam Penggunaan Bahan Tambahan Pangan Jajanan Anak Sekolah Di SDN Telukpucung VII Kota Bekasi Tahun 2019. *JUKMAS: Jurnal Kesehatan Masyarakat*, 3.

Nathalia, V. And Vakol, G., 2019. HUBUNGAN PENGETAHUAN DAN SIKAP MURID SD TERHADAP PERSONAL HYGIENE. *Jurnal Akademika Baiturrahim Jambi*, 08. http://dx.doi.org/10.36565/jab.v8i1.106

National Agency of Drug and Food Control, 2018. *Annual Report 2018*. Surabaya.

Notoatmodjo, Soekidjo, 2003. *Dalam Ilmu Kesehatan Masyarakat Prinsip-Prinsip Dasar*. Jakarta: PT Rineka Cipta.

Nozue, M., Ishida, H., Hazano, S., Nakanishi, A., Yamamoto, T., Abe, A., Nishi, N., Yokoyama, T. And Murayama, N., 2016. Associations Between Japanese Schoolchildren's Involvement In At-Home Meal Preparation, Their Food Intakes, And Cooking Skills. *Nutrition Research And Practice*, [Online] 10(3), P.359. doi: 10.4162/nrp.2016.10.3.359

Paratmanitya, Y. And Aprilia, V., 2016. Kandungan Bahan Tambahan Pangan Berbahaya Pada Makanan Jajanan Anak Sekolah Dasar Di Kabupaten Bantul. *Jurnal Gizi Dan Dietik Indonesia*, 4, Pp.49–55. http://dx.doi.org/10.21927/ijnd.2016.4(1).49-55

Pramastuty, L.I., Raharjo, M. And Hanani, Y., 2017. Faktor-Faktor Yang Mempengaruhi Keberadaan Zat Pewarna Dan Pengawet Terlarang Pada Makanan Jajanan Di Pasar-Pasar Tradisional Kota Semarang. *JURNAL KESEHATAN MASYARAKAT (E-Journal)*, 5.

Purtiantini, 2010. *Hubungan Pengetahuan Dan Sikap Mengenai Pemilihan Makanan Jajanan Dengan Perilaku Anak Memilih Makanan Di Sdit Muhammadiyah Al Kautsar Gumpang Kartasura*. Universitas Muhammadiyah Surakarta.

Putra, A.E., 2009. *GAMBARAN KEBIASAAN JAJAN SISWA DI SEKOLAH*. Universitas Diponegoro.

Ratnawati, S., Arundina, A. And Hadi, D.P., 2015. Hubungan Antara Tingkat Pengetahuan Tentang Higiene, Sanitasi Dan Nilai Gizi Terhadap Sikap Konsumsi Makanan Jajanan Siswa SMP Negeri Di Pontianak Barat. *Jurnal Cerebellum*, 1.

Sari, M.H., 2017. Pengetahuan Dan Sikap Keamanan Pangan Dengan Perilaku Penjaja Makanan Jajanan Anak Sekolah Dasar. *Jurnal Of Health Education*, 02. https://doi.org/10.15294/jhe.v2i2.16916

Supraptini, 2002. Kejadian Keracunan Makanan Dan Penyebabnya Di Indonesia 1995-2000. *Jurnal Ekologi Kesehatan*, 1.

Suswanti, I., 2015. *Faktor-Faktor Yang Berhubungan Dengan Pemilihan Makanan Cepat Saji Pada Mahasiswa Fakultas Kedokteran Dan Ilmu Kesehatan UIN Syarif Hidayatullah Jakarta Tahun 2012*. UIN Syarif Hidayatullah Jakarta.

Syahputra, H., 2018. *Pengetahuan, Sikap Dan Tindakan Konsumsi Jajanan Sekolah Di SDN 117851 Aek Nabara Dan SD Alwashlyah 82 Sukarame Kecamatan Kualuh Hulu Kabupaten Labuhan Batu Utara*. Universitas Sumatera Utara.

Triasari, R., 2015. *Hubungan Pengetahuan Dan Sikap Mengenai Jajanan Aman Dengan Perilaku Memilih Jajanan Pada Siswa Kelas V*. Hubungan Pengetahuan Dan Sikap Mengenai Jajanan Aman Dengan Perilaku Memilih Jajanan Pada Siswa Kelas V.

Vecchio, R., Cavallo, C., Cicia, G. And Del Giudice, T., 2019. Are (All) Consumers Averse To Bitter Taste? *Nutrients*, [Online] 11(2), P.323. doi: 10.3390/nu11020323

Wowor, P., Engkeng, S. And Kalesaran, A.F.C., 2018. Faktor-Faktor Yang Berhubungan Dengan Perilaku Konsumsi Jajanan Pada Pelajar Di Sekolah Dasar Negeri 16 Dan Sekolah Dasar Negeri 120 Kota Manado. *Jurnal KESMAS*, 7.