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An Overview of the Consumption of Vegetables and Fruit in Public Elementary School Children in Bogor Regency

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ABSTRACT
Background: The lack of behavior in eating vegetables and fruit among schoolchildren causes some children to suffer from malnutrition. This study aims to look at the description and relationship between the behavior of vegetable and fruit consumption with the variable characteristics of the respondents. **Methods**: Using a cross-sectional method and a 24-hour food recall. **Results**: There are 433 respondents, 49% male, and 51% female, age of the respondents between 10-12 years. The nutritional status of students, 8.7% severe thinness and thinness, 11.5% overweight and obese. Availability of vegetables in the "rarely" category was 57.3% and fruits 47.6%. The results of the food recall of respondents who consumed vegetables were 58.66% with an average consumption of 47.11 grams, while respondents who consumed the fruit were 23.09% with an average consumption of 18.84 grams. The reason respondents did not eat vegetables and fruit was that 40% had "no appetite" and "not available" 23.3%. The knowledge score of "poor" (under 60) is 95.4% with an attitude categorized as "fair" at 48%. From the results of the chi-square test, there was a relationship ($p < 0.05$) between the behavior of eating vegetables and fruit on gender, availability of vegetables, and the attitude of the respondents. There is no significant relationship between fruit vegetable consumption behavior and knowledge ($p > 0.05$). **Conclusion:** There are still students with malnutrition (thinness and overweight), The student's consumption of vegetables and fruit has not reached the recommended portion of 400 grams per day (250 grams of vegetables and 150 grams of fruit per day), there is a significant relationship between the behavior of eating vegetables and fruit with gender, availability of fruit vegetables, and the attitude of the respondents. **Suggestion**: schools can hold regular nutrition education activities with students and parents so that the habit of eating vegetables and fruit can be improved.
***Keywords**: Attitude, Consumption, Fruit, Knowledge, Vegetable*

1. INTRODUCTION

Vegetables and fruit are a source of vitamins, minerals and fiber that the body needs. Lack of consumption of vegetables and fruit increases the risk of non-communicable diseases such as cardiovascular disease [1], hypertension [2], cancer [3], diabetes [4], obesity [5], and disorders of digestion and vision [6]. According to the 2013 and 2018 RISKESDAS data, the national consumption behavior of less vegetables and fruit is above 90%. There is a tendency for school children to prefer foods that are risky, such as foods with excessive spices, packaged foods and drinks with sweet tastes and fatty foods such as fried foods, instant and practical food with a fast cooking process. And all unhealthy and unhealthy foods that are not nutritionally balanced are very easy to obtain, cheap and affordable, compared to healthy, nutritionally balanced foods. The aim of this study was to examine of vegetable and fruit consumption, to find out about the nutritional status of students and the factors related to the behavior of eating vegetables and fruit in elementary school students.

2. METHODS

Data collection was carried out from November to December 2018. The study population was all grade 5 public elementary school children in the Bogor Regency, Cibinong sub-district. The school selection was carried out by purposive sampling. Data collection on respondent characteristics, eating habits, knowledge and attitudes of respondents using a questionnaire, an overview of eating vegetables and fruit using a 24-hour food recall interview and measuring body weight using digital scales and height using a microtoise. The process of inputting questionnaire data using epidata and excel, processing food recall data using nutri survey version 2007, and nutritional status using WHO Antroplus. Processing of all data using SPSS (chi square test).

3. RESULTS

The results showed that there were 433 student respondents who participated in this study. Respondents with male gender are 49% and 51% female with an age range between 10 to 12 years. Most of the availability of vegetables and fruit at home is in the "Rarely" category, each with 57.3%, and fruit for 47.6%. Most of the respondents 91.5% stated that the mother is the person who provides food at home. Furthermore, 31.64% of respondents have "poor" knowledge about balanced nutrition but with an attitude that is in the "good" category of 50.81%. The results of the food recall showed that the respondents' consumption of vegetables and fruit was 41.34% and 76.91% of respondents did not eat vegetables and fruit. This is in line with their eating behavior by 40% not eating vegetables and fruit every day. The reason they did not eat vegetables and fruit was because they had "no appetite" for 40% and "not available" by 23.3%.

Table 1. Respondent characteristics

Variable	n	%
Gender		
Male	212	49
Female	221	51
Age		
10	183	42.3
11	231	53.3
12	19	4.4
Availability of vegetable		
Available	175	40.4
Rarely	248	57.3
NA	10	2.3
Availability of fruit		
Available	202	46.7
Rarely	206	47.6
NA	25	5.8
People who provide food at home		
Mother	396	91.5
Household assistant	12	2.8
etc	25	5.8
Reasons for not eating vegetables and fruit		
Not good	17	3.9
Do not like	64	14.8
Not appetizing	173	40.0
Expensive	53	12.2
Not available	101	23.3
etc	25	5.8
Knowledge score		
Fair	20	4.6
Poor	413	95.4
Attitude score		
Good	104	24.0
Fair	208	48.0
Poor	121	27.9
Nutritional status		
Severe thinness and thinness	38	8.7
Normal	345	79.8
Overweight and obesity	50	11.5
Vegetable consumption behavior		
Good	260	60
Poor	173	40
Fruit consumption behavior		
Good	261	60.3
Poor	172	39.7

Variable	Min-max	Mean± SD Vegetable
0-155	47.11±50.35	
Fruit	0-160	18.85±37.71

Table 2. Average consumption of vegetables and fruit

Table 2 shows the average vegetable consumption of 47.11 grams with a standard deviation of 50.35 and a maximum consumption value of 155 grams. These results indicate the low consumption of the respondents' vegetables every day. The recommended balanced nutrition guidelines are to consume at least 400 grams of vegetables and fruit per day (250 grams of vegetables and 150 grams of fruit). If converted to household sizes, one serving of vegetables is equal to one cup of fresh vegetables or half a bowl of cooked vegetables. While the average number of fruits consumed by respondents was 18.85 grams with a standard deviation of 37.71, with a maximum consumption of 160 grams. Although there are a small number of respondents who have consumed fruit according to the portion per day, if seen from the average there are still many children who do not eat fruit according to the portion, this could be due to the unavailability of fruit at home and the factor of not being used to eating fruit every day. and the prices of some fruits which tend to be expensive and not affordable for them.

Variable	Consumption				Total		P value
	Good		Poor				
	n	%	n	%	n	%	
Gender							
Male	113	53	99	47	212	100	0.005*
Female	147	67	74	33	221	100	
Age							
10	115	63	68	37	183	100	
11	137	59	94	41	231	100	0.202
12	8	42	11	58	19	100	
Availability							
Available	133	76	42	24	175	100	
Rarely	124	50	124	50	248	100	0.001*
NA	3	30	7	70	10	100	
Knowledge							
Fair	16	80	4	20	20	100	0.062
Poor	224	54	169	46	413	100	
Attitude							
Good	78	75	26	25	104	100	
Fair	130	62	78	38	208	100	0.001*
Poor	52	43	69	57	121	100	

Table 3. The relationship between vegetable consumption behavior in elementary school children

Table 3 shows a significant relationship between vegetable consumption behavior and respondent characteristics; gender, age, availability of vegetables at home, knowledge and attitudes of respondents. There is a significant relationship between vegetable consumption behavior and gender (p = 0.005) where the results above show that the sex of girls eats more vegetables than boys. Furthermore, there is a significant relationship between eating vegetables and the availability of vegetables at home (0.001), respondents who always have vegetables at home will eat more vegetables than those that are rarely available. There is a significant relationship between the behavior of eating vegetables with the score of the respondent's attitude towards nutrition (p = 0.001), if seen from table 3, the respondents with the attitude score in the "good" category eat more vegetables than those in the "fair" and "poor" attitude . The results of this study also showed that there was no relationship between vegetable consumption behavior with age (0.202) and nutritional knowledge score (0.062).

Table 4. The relationship between fruit consumption behavior in elementary school children

Variable	Consumption				Total		P value
	Good		Poor				
	n	%	n	%	n	%	
Gender							
Male	108	51	104	49	212	100	0.001*
Female	153	69	68	31	221	100	
Age							
10	120	66	63	34	183	100	
11	137	59	94	41	231	100	0.001*
12	4	21	15	79	19	100	
Availability							
Available	152	75	50	25	202	100	
Rarely	95	46	111	54	206	100	0.001*
NA	14	56	11	44	25	100	
Knowledge							
Fair	13	65	7	35	20	100	0.659
Poor	248	60	165	40	413	100	
Attitude							
Good	72	69	32	31	104	100	
Fair	132	63	76	37	208	100	0.001*
Poor	57	47	64	53	121	100	

Table 4 shows that there is a significant relationship between fruit eating behavior and gender (0.001), girls eat more fruit than boys. There is a significant relationship between fruit consumption behavior towards age (0.001) and availability of fruit at home (0.001), children will always eat fruit if fruit is always available at home compared to those that are rarely and not available. And there is a significant relationship with the respondent's attitude score (0.001)

4. DISCUSSIONS

Based on the results of research, the average consumption of vegetables and fruit is still very low and has not reached the recommended number of servings of at least 400 grams per day (250 grams of vegetables and 150 grams of fruit), this is in line with studies [7] which show that more than 80% of children consume less than the recommended portion per day. The factor of the availability of vegetables and fruit at home and at school is still rare and the reason that children don't like to eat vegetables and fruit is because they don't have an appetite. Not appetizing could be due to a lack of variation in taste, so that additional seasonings or spices are needed to increase vegetable intake in children [8]. The availability and taste factors can affect the child's eating habits. The availability factor is also determined by the role of parents, especially mothers who manage child and household affairs, in line with studies [9] the availability of fruits and vegetables at home is lacking, and lack of parental support for fruit and vegetable consumption is a risk factor for less. consumption of fruits and vegetables. Mother is an important factor in the provision and management of healthy food at home, in line with studies [10]. The role of mothers as educators is related to the consumption of fruit vegetables in children because they are related to the provision of vegetables and fruit at home. The more often they are available, the easier they are, the cheaper they are, the more possible the child is to eat vegetables and fruit every day. According to [11] Providing children with free, accessible fruits and vegetables have been experimentally shown to positively affect long-term eating behavior.

The results of this study indicate that there is no significant relationship between vegetable and fruit consumption behavior and knowledge scores, this is not in line with the results of the study [12] which states that children's nutritional knowledge is positively related to fruit and vegetable consumption. However, if it is seen from the frequency of knowledge scores, most of the respondents have a low knowledge score of 95.4%, many children do not know about balanced nutrition, the benefits of vegetables and fruit, the number of servings that must be consumed per day and the impact of eating less vegetables and fruit. However, there is a significant relationship between the behavior of eating vegetables and fruit with gender, availability of vegetables and fruit, and attitude score.

5. CONCLUSION

Consumption of vegetables and fruit is still low and not in accordance with the recommended portion. The reasons respondents did not eat vegetables and fruit were 40% "no appetite" and 23.3% "not available". The "poor" knowledge score (score below 60) was 95.4% with the "fair" category

attitude at 48%. There was a significant relationship (p <0.05) between the behavior of eating vegetables and fruit on gender, availability of vegetables, and the attitude of the respondents. There is no significant relationship between the behavior of consuming vegetables and fruits on the nutritional knowledge of respondents (p> 0.05).
Suggestion: Schools can hold regular nutrition education

activities with students and parents so that the habit of eating vegetables and fruits can be improved

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