Knowledge, levels of consumption of vegetables and fruits in adolescents at SMPN 1 CIOMAS Bogor Regency

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Abstract---Vegetables and fruits is a good source of micronutrients contains fiber, vitamins and minerals. Vegetables and fruits for teenagers can nourish the digestive system, promote bone growth, nourish the eyes, promote the development of brain and nerve cells. Based on Balanced Nutrition Guidelines 2018, the need for vegetables and fruit for adolescents is 00-600g per day, which includes 250g of vegetables and 150g. Based on data from Riskesdas 2018, it can be seen that nationally, the behavior of the population over 10 years old (adolescents) eat less vegetables and fruit is 95.5%, this figure is an increase compared to with the results of Riskesdas. 2013 was 93.5%.The purpose of this study was to describe the knowledge and consumption of vegetables and fruit in adolescents. The design of this research is descriptive research. The sampling method used is simple random sampling with a target of 87 respondents. This research was conducted at SMPN 1 Ciomas, Bogor Regency. Data were obtained by respondents filling out a knowledge questionnaire containing 20 questions and a FFQ (Food frequency questionnaire). The results of this study indicate that from 97 respondents, as many as 62 respondents (64%) have sufficient knowledge, as many as 18 respondents (19%) have less knowledge and as many as 17 respondents (17%) have good knowledge. The level of consumption of vegetables and fruit in this study showed that as many as 49 respondents (51%) had a bad level of consumption, as many as 48 respondents (49%) had a good level of consumption.

Keywords---Adolescents, Vegetables and fruits, Consumption level, Knowledge.

Introduction

Adolescence is a period of transition between childhood and adulthood, and rapid physical, cognitive, social, and emotional maturation. Adolescent development begins in early adolescence (11 years), middle adolescence (15-17 years) and late adolescence (18-20 years) (Wong, 2009).

During adolescence, especially early adolescence, nutritional needs are very important for growth and development. The food consumed must be contains balanced nutrition such as carbohydrates, side dishes, milk, vegetables and fruits (Guide to Balanced Nutrition, 201). Vegetables and fruits are good sources of micronutrients contain fiber, vitamins and minerals, or essential inputs to increase energy production in muscle cells (Guidelines for a Balanced Diet, 201). The benefits of eating vegetables and fruit for teenagers is that it can nourish the system digestion, promote bone growth, help teens grow more high, nourish the eyes of teenagers, helps the growth of brain cells and neurons (Glori, 2018).

The World Health Organization (WHO) generally recommends the consumption of vegetables and fruit for adolescents of 400-600 grams per person per day, consisting of 250 g of vegetables (equivalent to $2^{1/2}$ servings or $2^{1/2}$ glasses of vegetables after cooking and draining) and 150 g of fruit (equivalent to 3 medium sized Ambon bananas or $1^{1/2}$ Cut a medium-sized papaya or 3 medium-sized oranges), two-thirds of the total consumption of vegetables and fruit is a portion of vegetables (Balanced Nutrition Guidelines, 2014). According to research conducted by Peltzer in 2012, the results showed that consumption of vegetables and fruit in several developing countries in the world, namely India, Indonesia, Myanmar, Sri Lanka and Thailand, it was stated that the prevalence of lack of consumption of vegetables and fruit in adolescents aged 13-15 years was 75, 2% in Indonesia, followed by India at 85.1%, Myanmar at 83.3%, and Sri Lanka at 77.1%. Based on Basic Health Research data (2018), it shows that nationally the behavior of the population aged > 10 years who consumes less vegetables and fruit is at 95.5%, this number is an increase compared to the results of the Basic Health Research (2013) of 93.5 %. The results of the West Java Basic Health Research (2018), the behavior of the population who consumes less vegetables and fruit is 98.2%, this number has increased compared to 2013 which was 95%. According to Ramussen in 2011, the factors that influence the low consumption of vegetables and fruit in adolescents are influenced by parental factors, namely the delay in introducing vegetables and fruit, the inability to provide examples of good vegetable and fruit consumption, low socioeconomic status and the limited availability of vegetables and fruit in the community. House. Vegetable and fruit consumption behavior in adolescents is also influenced by several factors such as age, gender, preferences/favorites for vegetables and fruit, cultural background, pocket money, availability of vegetables and fruit at home and the influence of parents and peers. The Ministry of Health In seeking to increase consumption of vegetables and fruits, socialize the Healthy Living Community Movement (GERMAS) program, the Ministry of Health urges the public to behave in accordance with the healthy paradigm. The application of the healthy paradigm is carried out through two efforts, namely through the family approach and the Healthy Living Community Movement (GERMAS). The government said that GERMAS will focus on three main activities, namely regular health checks,

physical activity, and eating vegetables and fruit (Kemenkes, 2016). Based on the results of a preliminary study conducted on 10 students at SMPN 1 Ciomas, Bogor Regency about knowledge of vegetables and fruits, it was found that 3 out of 10 students knew the benefits, substances contained, and the impact of not consuming vegetables and fruit. while 7 out of 10 students do not know it. 2 out of 10 students know the number of servings in consuming vegetables and fruit for 1 day, the student said the information came from his parents. 8 out of 10 students do not know the number of servings in consuming vegetables and fruit for 1 day. Based on the results of interviews about vegetable consumption, 5 out of 10 students like eat vegetables 1 to 2 times a day, 1 in 10 students eat vegetables 3 to 4 times a day, 3 out of 10 students rarely eat vegetables, as many as 1 in 10 students never eat vegetables. Students said the amount of vegetable consumption in one day depends on the parents who buy vegetables.   While the results of interviews about fruit consumption, 5 out of 10 students like to eat fruit once a day, 2 out of 10 students like to eat fruit 2 to 3 times a day, 3 out of 10 students rarely eat fruit. Students said the amount of consumption of vegetables and fruit in one day depends on the parents who buy it.

Research Methods

This research design uses descriptive research methods. The research location was carried out based on a preliminary study on February 1, 2019 and this research was carried out in May 2019 at SMPN 1 Ciomas, Bogor Regency. The population in this study were 7th and 8th graders aged 11-14 years at SMPN 1 Ciomas totaling 675 students. The total population is obtained through school attendance. The inclusion criteria were youth aged 11-14 years from grade 7 to grade 8 at SMPN 1 Ciomas Bogor Regency, Youth aged 11-14 years from grade 7 to grade 8 at SMPN 1 Ciomas Bogor Regency who were present at the time of the study, Teenagers aged 11-14 years old who are willing to be respondents. Exclusion criteria were adolescents aged 11-14 years who were sick at the time of the study. The sampling method used a list of names of class VII and VIII students at SMPN 1 Ciomas, then the sample selection was calculated according to the number of population (proportions) in each class, then respondents who met the inclusion criteria were numbered and all respondents were randomized by a lottery system. The sampling technique used in this research is *Simple Random Sampling.* Based on the calculation of the sample formula, a sample of 87 students was obtained and the dropout data was 97 students. The research instruments used during data collection included questionnaire A, Questionnaire B, Questionnaire C. Questionnaire A contained demographic data such as age, availability of vegetables and fruit at home, preferences for vegetables and fruit, and sources of information. All questions in Questionnaire A are filled out by means of a cross (x). Questionnaire B contains 20 questions, questions about the meaning of vegetables and fruit are in numbers 1 and 2, questions about the benefits and uses of eating vegetables and fruit are in numbers 3 and 4, questions about the nutritional content of vegetables and fruit are in questions no 5, 6, 9, 10, 14, 15, 16, 17, and 18. Questions regarding the recommendation to eat vegetables and fruit are listed in numbers 12 and 13. Questions about the consequences of not eating vegetables and fruit are listed in numbers 7 and 8. Questions about types of vegetables based on the color is found in number 11. False and true statements are found in numbers 19 and 20. Questionnaire B is

filled out by placing a cross (X) on the available answer choices (a, b, c or d). Questionnaire C in the form of FFQ *(Food frequency questionnare)* containing the frequency of food; daily, weekly, monthly, rarely/never. With categories above 1 times per day, once per day, 1 to 2 times per week, 3 to 6 times per week, 2 times per month, and never. Questionnaire C is filled out by putting a *checklist* (√) in the box of choice according to the frequency of consumption of vegetables and fruit. The data that has been collected is processed and analyzed through several stages, namely editing, coding, tabulation, entry, and cleaning. The analysis used is univariate analysis, namely by analyzing variables, namely knowledge, level of consumption of vegetables and fruit at SMPN 1 Ciomas, Bogor Regency. The results of this study were interpreted using a scale according to Arikunto (2009).

Research Results
Respondents

Characteristics of students / I SMPN 1 Ciomas in this study include age, availability of vegetables and fruit, vegetable and fruit preferences, and sources of information.
a. Age

Table 5.1
Distribution of Respondents Frequency Based on Age Characteristics of Adolescents at SMPN 1 Ciomas
(n=97)

Age	Total	Percentage
11 years	1	1%
12 years	10	10%
13 years	34	35%
14 years	52	54%
Total	97	100%

Based on table 5.1 above, it shows that the most age is more than half, namely 52 respondents (54%) are 14 years old, and a small part, namely 1 respondent (1%) is 11 years old.

b. Availability of fruit

Table 5.2
Distribution of Frequency of Respondents Based on Characteristics of Availability of Fruits at Home for Adolescents at SMPN 1 Ciomas
(n=97)

Availability	Total	Percentage
Yes	19	19%
Sometimes	88	91%
No	0	0%
Total	97	100%

Based on table 5.2 above, it shows that most of the 88 respondents (91%) sometimes have fruit available at home, and a small part, namely 19 respondents (19%) always have fruit available at home every day.

c. Availabilityof vegetables

Table 5.3
Frequency Distribution of Respondents Based on the Characteristics
Availability of Vegetables at Home for Teenagers at SMPN I Ciomas
(n=97)

Availability	Total	Percentage
Yes	50	52%
Sometimes	47	48%
No	0	0%
Total	97	100%

Based on table 5.3 above, it shows that more than half of them, namely 50 respondents (52%) always have vegetables at home every day and less than half of them, namely 47 respondents (48%) sometimes vegetables are available at home.

d. Vegetable preference

Table 5.4
Frequency Distribution of Respondents Based on Characteristics
of Vegetable Preference in Teenagers at SMPN 1 Ciomas
(n=97)

Preference	Total	Precentage
Fresh vegetables	9	9%
Soup	65	67%
Sauteed	21	22%
Dioseng	1	1%
Dislike	1	1%
Jumlah	97	100%

Based on table 5.4 above, it shows that more than half of them, namely 65 respondents (67%) prefer to eat vegetables in the form of processed soup, a small part, namely 1 respondent (1%) likes to eat vegetables with stir-fry and 1 respondent (1%) does not like vegetables.

e. Fruit preference

Table 5.5
Distribution of Respondents Frequency Based on Characteristics of Fruit
Preference in Adolescents at SMPN 1 Ciomas (n=97)

Preference	Total	Percentage
Fresh fruit	57	60%
Juice	18	18%
Rujak	5	5%
Fruit Soup	17	17%
Dislike	0	60%
Total	97	100%

Based on table 5.5 above, it shows that more than half of them, namely 57 respondents (60%) prefer to eat fruit with fresh fruit, a small portion, namely 5 respondents (5%) like to eat fruit with salad.

f. Sources of information

Table 5.6
Distribution of Frequency of Respondents Based on Characteristics of Sources of
Information on Vegetables & Fruits in Adolescents at SMPN 1 Ciomas
(n=97)

Sources of information	Total	Percentage
Print Media	3	3%
Electronic Media	32	33%
Parent,teachers, dan peers	62	64%
never	0	0%
Total	97	100%

Based on table 5.6 above, it shows that more than half of them, namely 62 respondents (64%) have received information through parents, teachers, and peers. and a small part, namely 3 respondents (3%) had received information through print media.

Distribution of variables a
a. Variables of knowledge

Table 5.7
Distribution of respondents' frequency based on knowledge of vegetables and
fruits in adolescents at SMPN 1 Ciomas (n=97)

Level of Knowledge	Total	Precentage
Good	17	17%
Enough	62	64%
Less	18	19%
Total	97	100%

Based on table 5.7 above, it shows that more than half of them, namely 62 respondents (64%) have sufficient knowledge, a small portion, namely 17 respondents (17%) have good knowledge.

b. Consumption rate variable

Table 5.8
Frequency Distribution of Respondents Based on Levels of Consumption of Vegetables and Fruits in Adolescents at SMPN 1 Ciomas (n=97)

Level Consumption	Total	Precentage
good	48	49%
Not good	49	51%
Total	97	100%

Based on table 5.8 above, it shows that more than half of them, namely 49 respondents (51%) have a poor level of consumption, and less than half of them, namely 48 respondents (49%) have a good consumption level.

Discussion

Characteristics of respondents
a. Age
The results obtained regarding age, indicating that the age at most is more than half, namely 52 respondents (54%) are 14 years old. The results of research regarding age are not in line with the results of research conducted by Devi and Listiyana (2016) regarding consumption of vegetables and fruit, less than half of them, namely 39 respondents (47.2%) aged 12 years. This is different because of different environmental factors such as different research locations, different school characteristics, and the characteristics of children aged 12 years and 14 years are also different.

b. Availability of vegetables and fruit
The results of the study regarding the availability of vegetables, showed that half of them, namely 50 respondents (52%) always had vegetables available at home every day. The results of this study are in line with research conducted by Ryska et al (2014), most of which are 230 respondents (89.5%) always have vegetables available at home. In addition, the data obtained regarding the availability of fruit, shows that most of the 88 respondents (91%) sometimes have fruit available at home. This result is not in line with the research of Ryska et al (2014), most of which are 204 respondents (93.2%) always available fruit at home. This is supported by the statement of Ramussen (2011), namely with the availability of vegetables and fruit at home, adolescents will easily consume vegetables and fruit. Teenagers will have the opportunity to eat vegetables and fruit every day to support balanced nutrition. This is influenced by the economic factors of parents that affect the purchasing power of vegetables and fruit, or parents who have vegetable and fruit gardens at home, making it easier for teenagers to consume vegetables and fruit. Availability of vegetables and fruit affects adolescents' preferences in consuming vegetables and fruit.

c. Vegetable and fruit preferences

The results obtained regarding vegetable preferences show that more than half, namely 65 respondents (67%) prefer to eat vegetables with processed soup, and more than half, namely 57 respondents (60%) prefer to eat fruit with fresh fruit. This is in line with the results of research by Fibrihirzani (2012) and Annur (2014) states that there is a significant relationship between preference and consumption of vegetables and fruit. Teenagers' preferences in consuming vegetables and fruit depend on their preferences in consuming vegetables and fruit. A good preference shows that teenagers consume vegetables and fruit in any form. One of the factors that influence preferences is the availability of vegetables and fruit, with the availability of vegetables and fruit, adolescents can have the opportunity to choose the types of vegetables and fruits to be consumed and how to process them.

d. Sources of information

The results of the research obtained regarding the sources of information, showed that more than half, namely 62 respondents (64%) had received information through parents, teachers, and peers. The results of this study are in line with research conducted by Devi and Listiyani (2016), half of them, namely 50 respondents (50%) have received information about vegetables and fruits from their parents, teachers, and peers. This is supported by the statement by Ramussen (2011) that the information received by adolescents in consuming vegetables and fruit depends on environmental factors, if the environment that can provide information for adolescents will be easier to consume vegetables and fruit. On the other hand, if the environment does not provide information, adolescents will find it difficult to consume vegetables and fruit.

Knowledge

The results showed that of the 97 respondents studied, more than half of the respondents, namely 62 respondents (64%) had sufficient knowledge. This result is not in line with the research conducted by Sukmawati et al. (2016) regarding knowledge, consumption of vegetables and fruit and nutritional status in adolescents. It was found that out of 120 students, more than half of the respondents as many as 64 students had less knowledge (53.3%). According to Notoatmodjo (2012) knowledge is the result of "knowing" and this occurs after people make senses through the human senses, namely sight, hearing, smell, taste and touch. Most of human knowledge is obtained through the eyes and ears. Knowledge or cognitive is a very important domain for the formation of one's actions *(overt behavior).* According to Notoatmodjo (2012), there are several factors that affect the knowledge of adolescents in particular, namely education, age, sources of information, availability, and environment. With the availability of vegetables and fruit at home, teenagers will have good knowledge by knowing the contents and contents of vegetables and fruit. In addition, the source of information as an important factor in influencing adolescent knowledge, the more information obtained the better the level of adolescent knowledge. Environmental factors also affect knowledge because the habit of consuming vegetables and fruit can have information about vegetables and fruit. If there is no information, or environmental factors that do not support adolescents in increasing knowledge

about vegetables and fruits, the knowledge of adolescents will eventually become low.

The level of consumption of vegetables and fruit

The results showed that of the 97 respondents studied, more than half of them, 49 respondents (51%) had poor consumption levels. The results of this study are in accordance with research conducted by Sukmawati et al in 2016 regarding knowledge, consumption of vegetables and fruit and nutritional status in adolescents, it was found that from 120 students. Adolescents who have a low level of vegetable and fruit consumption are 68 students (56.7%). This is due to the lack of availability of vegetables and fruit at home which causes adolescents to consume less vegetables and fruit, with a consumption level that is not good allowing adolescents to have a poor level of knowledge. In addition, economic factors also affect adolescents in consuming vegetables and fruit, a high economic level can have youth purchasing power in consuming vegetables and fruit, on the other hand a low economic level allows adolescents to consume less vegetables and fruit due to low purchasing power. According to Sirajudin et al (2018), the level of consumption is divided into two, namely the level of good consumption and the level of consumption that is not good. Of course, from this there are differences in value and consumption itself for individuals. According to Ramussen (2011), there are several factors that influence the consumption of vegetables and fruit, namely age, vegetable and fruit preferences, cultural/social economic background, pocket money, availability of vegetables and fruit, influence of parents and peers, knowledge of vegetables and fruits, and the physical appearance of vegetables and fruit.

Conclusion

Based on the results of research on knowledge, the level of consumption of vegetables and fruit in adolescents at SMPN 1 Ciomas, Bogor Regency in 2019, several conclusions can be drawn as follows: The characteristics of the age of 97 respondents are dominated by the age of 14 years with a percentage of 54% or 52 respondents. The characteristics of the availability of vegetables are dominated by always having vegetables available at home every day with a percentage of 52% or a total of 50 respondents. Characteristics of vegetable preferences are dominated by preferring to consume vegetables in the form of processed soup with a percentage of 67% or a total of 65 respondents. Preference for fruit is dominated by preferring to eat fruit with fresh fruit with a percentage of 60% or 57 respondents. The characteristics of information sources are dominated by having received information through parents, teachers, and peers with a percentage of 64% or 62 respondents. Knowledge level of vegetables and fruit is dominated by sufficient knowledge with a percentage of 64% or totaling 62 respondents. The level of consumption of vegetables and fruit is dominated by the level of consumption is not good with a percentage of 51% or 49 respondents.

Recommendation

It is hoped that the existing data regarding knowledge and consumption of vegetables and fruits in adolescents can be utilized and developed by further

researchers to conduct research by exploring more about the relationship between knowledge and other factors that affect knowledge and consumption of vegetables and fruits such as personal experience, motivation, environment, socioeconomic, motivational or cultural.   The school can also provide attention and intervention on the consumption of vegetables and fruit for their students, such as schools can cooperate with the puskesmas in counseling about knowledge and consumption of vegetables and fruit in fulfilling balanced nutrition for adolescents. In increasing consumption of vegetables and fruit, the researchers provided posters and counseling about knowledge, consumption of vegetables and fruits at SMPN 1 Ciomas, Bogor district.

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