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Analyze Carbohydrate, Fata and Protein Intake in Nutritional Status Students SMA Negeri 1 Baitussalam Regency Aceh Besar, Indonesia

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Abstract. One of the nutritional problems of adolescent children is obesity, which is caused by excess food consumption and excess fat. The primary energy sources are carbohydrates and fats, while protein is a building block. The research aimed to determine the effect of the intake of carbohydrates, fats, and proteins on the nutritional status of students at SMA Negeri 1 Baitussalam, Aceh Besar Regency. The total student population is 303 students. Thirty students took sampling using a random sampling technique, and 10%. Data collection techniques include a 24-hour food recall questionnaire, anthropometric measurements and a fita health nutrition application. Data analysis techniques are based on averages and percentages. Based on research, it is known that:

1. Carbohydrate intake with an average nutritional status of -0.4 in the "Normal" category obtained an average value of 299 grams with a threshold value of 81% in the (Good) category, based on the percentage in the "Good" category, namely 16 students with 53%, in the "Less" - eight students with 27% and the "More" - six students with 20%.

2. Fat intake with an average nutritional status of -0.4 in the "Normal" category obtained an average value of 127 grams with a threshold of 143% in the (More) category. In the "Good" category, there are four students with 13%. In the "Less" category, nine students with 30%, and in the "More" category, 17 students with 57%.
3. Protein intake with an average nutritional status of -0.4 in the "Normal" category obtained an average value of 130 grams with a threshold value of 197% in the (More) category. In the "Good" category, there are two students with 7%. In the "Less," one student has 3%, and the "More" has 27 students with 90%.

Keywords: Intake; Carbohydrates; Fat; Protein; Nutritional Status.

INTRODUCTION

The quality of Indonesian children in the future and becoming the next generation for the country's development and investment towards becoming a developed country can be considered globally. One of the determinants of a country's quality human resource investment is the growth and development of the nation's children. Of course, adequate child nutrition must support efforts to improve this quality. Adolescents are in the period from growth to the process of human maturity; during this period, unique and sustainable changes occur (according to the Indonesian Ministry of Health, the group of adolescents is aged 10-19).

Asupan from food or food requirements is one factor that significantly influences nutritional intake; if the food consumed is good, then nutritional status will be good and vice versa [1]. The increase in the prevalence of obesity in school-aged children is associated with several factors, including environmental factors, namely family socioeconomics, excessive energy consumption, physical activity, and exposure to advertisements regarding snack foods [2]. The still high prevalence of malnutrition is associated with several factors, such as a

general lack of food sources and protein, which can result in protein energy deficiency disease [3].

Nutritional problems that occur more often are caused by high intake of carbohydrates and fats, but this is not balanced with sufficient physical activity. Carbohydrates, proteins and fats influence the impact of obesity (excess nutrition) through food, digestion, nutrient absorption and body metabolism. Food must always be sufficient for the body's needs and not cause excess weight (obesity) because a versatile diet rich in carbohydrates, protein and fat causes excess nutrition. High physical activity also increases energy and nutritional requirements. Apart from that, there are quite a few teenagers who overeat and end up becoming obese or, conversely, teenagers who limit their eating because they are worried that they will experience malnutrition [4].

Adolescents, or the younger generation, are one of the nutritionally vulnerable groups. Nutritional problems in middle school children are an age that requires more attention because it can affect growth and development and become a problem during adolescence. A common dietary problem in adolescents is obesity caused by consuming energy-dense foods, viz. excess fat and carbohydrates that are not balanced with sufficient physical activity. The primary energy sources are carbohydrates and fats, while protein is used as a building material. Nutrition is the process by which organisms use food typically consumed in digestion, absorption, transportation, storage, metabolism and excretion, which is not used for maintenance, growth and normal function of organs and energy production. No single food contains all the nutrients that enable a person to live a healthy, growing and fruitful life. Therefore, everyone should eat a varied diet.

The five substances are four healthy and five perfect, namely:

1) staple foods, foods that are consumed daily such as rice, corn, potatoes, and wheat/wheat flour, as well as other tubers;

2) side dishes, which are companions to staple foods to fulfil the body's need for building blocks, for example, eggs, meat and fish, etc.;

3) vegetables fulfil the need for regulatory substances in the body and contain many vitamins for the body. Such as kale, tomatoes, chillies, eggplant and others;

4) fruit, almost the same as vegetables, is used for food functions to fulfil the need for regulatory substances in the body. For example, apples;

5) milk complements the four foods above, which contain various useful and good substances for the body, especially calcium, which strengthens bones.

Based on observations and the condition of the Baitussalam 1 Public High School (Aceh Besar Regency). This school is located in the village of Klieng Cot Aron, Baitussalam District, Aceh Besar, which has an average of students from the local or local area and families with backgrounds behind farmers and fishermen. The school's location is by the conditions of livelihood near the school location, but if you look at the body shape of the students at the school, both of them have a body shape that looks fat medium, and some students look thin. So researchers don't yet know the student's nutritional status.

Researchers also see that various kinds of food are difficult to control in modern times. These are not suitable for consumption by students, even in school canteens where the average food sold, such as fried meatballs, fried sausages, and other fried foods, is oily. Some Indonesians like to consume instant noodles to replace daily staple foods. Also, at the Baitussalam 1 Public High School, Aceh Besar Regency, research has never been conducted on students' food intake and nutritional status.

METHODS

Based on the research problem, the researcher used a quantitative approach with a descriptive research type.

The author [5] population is a generalization consisting of objects/subjects with specific qualities and characteristics determined by researchers to be studied and then conclusions drawn. The population in this study was all students at SMA Negeri 1 Baitussalam, Aceh Besar Regency, totalling 303 students. The samples will be taken using random sampling techniques.

Based on population, if the population is more than 100, then sampling is 10–15 % or 20–25 % [6]. So, the sampling in this study was 10%. So, the number obtained is 30 students as the research sample.

This research includes data to determine carbohydrate, fat and protein intake using a 24-hour

food recall questionnaire instrument and a food model as a tool for nutritional value. Results of 24-hour food recall intake using the Fita Health Nutrition Program application and anthropometric measurements were carried out as weight and height measurements.

Data analysis techniques are based on averages. Namely, this method is a statistical analysis method that looks for the average value of specific data. With this average value, you can see which factor is the most dominant over the other factors and then calculate the percentage value to see the picture Frequency of each variable.

RESULTS AND DISCUSSION

Based on research that has been carried out to determine the intake of carbohydrates, fats and proteins and the nutritional status of adolescents in Baitussalam State High School students, Aceh Besar Regency. The student's weight and height are based on the following table.

Table 1 – Results of Carbohydrate Intake of Students

No	Name	Carbohydrate, g	Threshold, %	Category
1	Affan Alfatan	186.6	51	Not enough
2	Anggia Yurna	271.9	93	Good
3	Asmatur Rahmi	275.2	94	Good
4	Edi Saputra	346.6	94	Good
5	Evi Santi	418.0	143	More
6	Ferri Nazirah	281.5	96	Good
7	Hafsah Aulia	298.0	102	Good
8	Khairi Putri	574.1	197	More
9	M Khafiz	322.9	88	Good
10	M Lutfi	201.7	55	Not enough
11	M Rafiqul Ikhwan	220.6	60	Not enough
12	M Rama Saputra	187.5	51	Not enough
13	Maulidin	356.0	97	Good
14	Muarif	240.0	65	Not enough
15	Munawarah	213.7	73	Not enough
16	Nadilla	280.1	96	Good
17	Nurhayati	218.8	75	Not enough
18	Nurkomariah	425.1	146	More
19	Nurul Azmi	285.9	98	Good
20	Pipit Agustina	238.3	82	Good
21	Risqi Aulia's son	466.5	127	More
22	Rahmat Fikri	341.7	93	Good
23	Reviani	250.9	86	Good
24	Reza Syuhada	316.6	86	Good
25	Rika Aulia	189.9	65	Not enough
26	Syifa Alya	305.9	105	Good
27	Tsaniyah	252.8	87	Good
28	Wilda Cahyani	256.0	88	Good
29	Zahratul Riefa	330.6	113	More
30	Zidane	424.8	115	More
Total		8978		
Average		299	81	Good

The results of carbohydrate intake can be seen, and it can be explained that the average carbohydrate intake for students is 299. The results are compared with the table of carbohydrate intake categories based on the National Food and Nutrition; with a threshold value of 81%, the classification is in the "Good" category.

Table 2 – Distribution of Carbohydrate Intake of Students

No	Category	Frequency	%
1	Good	16	53
2	Not enough	8	27
3	More	6	20
Amount		30	100

Based on the percentage results in the carbohydrate intake distribution table above, it shows that the carbohydrate intake (X1) of students who have the "Good" category, namely 16, get 53%. In the "Poor" category, eight students scored 27%; in the "More" category, six students got a percentage score of 20%.

Carbohydrate intake that is consumed properly will undoubtedly have a good impact on the body, namely as a source of energy for the body, preventing the protein from being processed as an energy producer. The effect of a lack of carbohydrates is a reaction to form carbohydrates not from glycogen but from fat (fatty acids and glycerol) and protein (amino acids).

Excessive carbohydrate intake will be synthesized into body fat, while the fat already available in the body is not used for energy. As a result, fat growth continues to occur and results in overweight or obesity.

Table 3 – Results of Fat Intake of Students

No	Name	Fat, g	Threshold, %	Category
1	Affan Alfatan	157.3	177	More
2	Anggia Yurna	108.4	145	More
3	Asmatur Rahmi	96.0	128	More
4	Edi Saputra	146.7	165	More
5	Evi Santi	135.4	181	More
6	Ferri Nazirah	96.1	128	More
7	Hafsah Aulia	270.1	360	More
8	Khairi Putri	112.9	151	More
9	M Khafiz	254.2	286	More
10	M Lutfi	52.9	59	Not enough
11	M Rafiqul Ikhwan	68.4	77	Not enough
12	M Rama Saputra	51.7	58	Not enough
13	Maulidin	73.8	83	Good
14	Muarif	60.2	68	Not enough
15	Munawarah	49.6	66	Not enough
16	Nadilla	54.9	73	Not enough
17	Nurhayati	54.2	72	Not enough
18	Nurkomariah	223.5	298	More
19	Nurul Azmi	238.5	318	More
20	Pipit Agustina	75.5	101	Good
21	Risqi Aulia's son	46.9	53	Not enough
22	Rahmat Fikri	208.8	235	More
23	Reviani	50.6	67	Not enough
24	Reza Syuhada	84.5	95	Good
25	Rika Aulia	61	81	Good
26	Syifa Alya	275.7	368	More
27	Tsaniyah	156.7	209	More
28	Wilda Cahyani	113.8	152	More
29	Zahratul Riefa	232.6	265	More
30	Zidane	211.7	238	More
Total		3823		
Average		127	143	More

Based on the above analysis, the average fat intake for students is 127. The results are compared with the fat intake category table based on the National Food and Nutrition, with a threshold value of 143%; the classification is in the "More" category.

Table 4 – Distribution of Fat Intake of Students

NO	Category	Frequency	%
1	Good	4	13
2	Not enough	9	30
3	More	17	57
Amount		30	100

Based on the percentage results show that the fat intake (X2) of students who have the "Good" category, namely four students get 13%. In the "Poor" category, nine students had 30%, and in the "More" category, 17 students got 57%.

The illustration is that if the fat intake consumed is higher, the results obtained should be in the overweight or obese category, not in the normal category. Hence, the researchers assume that other factors regulate nutritional status results. Based on the level of light, medium and cumbersome physical activity, different energy requirements are required, meaning that even though the fat intake obtained or consumed is in the higher category, if it is combined with balanced physical activity or fat intake from food, it has become energy and If appropriately used, based on BMI, overweight or obesity will not occur, because the body has used fat intake from food or energy sources for physical activity. On the other hand, if physical activity is carried out excessively so that the energy from fat intake is insufficient, it will affect BMI and cause it to become thin. Based on the assumptions of physical activity, it ultimately determines the actual nutritional status results, so it is not about sound, less or more intake.

Fat consumption will positively impact the body, as fat is used as a lubricant between the joints, as a buffer against feelings of hunger due to the longer digestibility of fat, and as a better taste and fragrance in food. The impact of a shortage of fat can cause a reduction in energy availability because energy must be met, catabolism or protein breakdown occurs, and increasingly reduced fat reserves will significantly affect body weight in the form of weight loss.

Excessive fat consumption can cause obesity, which is a risk factor for cardiovascular disease because it can cause hypertension and diabetes.

Table 5 – Results of Protein Intake of Students

No	Name	Proteins, g	Threshold, %	Category
1	Affan Alfatan	224.1	340	More
2	Anggia Yurna	107.1	182	More
3	Asmatur Rahmi	73.8	125	More
4	Edi Saputra	134.1	203	More
5	Evi Santi	109.8	186	More
6	Ferri Nazirah	77.6	132	More
7	Hafsah Aulia	272.7	462	More
8	Khairi Putri	87.6	148	More
9	M Khafiz	240.7	365	More
10	M Lutfi	57.4	87	Good
11	M Rafiqul Ikhwan	100.7	153	More
12	M Rama Saputra	107.0	162	More
13	Maulidin	86.0	130	More
14	Muarif	90.1	137	More
15	Munawarah	66.8	113	More
16	Nadilla	91.5	155	More
17	Nurhayati	76.4	129	More
18	Nurkomariah	194.1	329	More
19	Nurul Azmi	175.9	298	More

No	Name	Proteins, g	Threshold, %	Category
20	Pipit Agustina	36.5	62	Not enough
21	Risqi Aulia's son	84.5	128	More
22	Rahmat Fikri	247.1	374	More
23	Reviani	74.2	126	More
24	Reza Syuhada	97.3	147	More
25	Rika Aulia	56.5	96	Good
26	Syifa Alya	230.5	391	More
27	Tsaniyah	166.2	282	More
28	Wilda Cahyani	110.2	187	More
29	Zahratul Riefa	216.5	367	More
30	Zidane	203.6	308	More
Total		3896		
Average		130	197	More

Based on the analysis above, the average protein intake for students is 130. The results are compared with the protein intake category table based on the National Food and Nutrition, with a threshold value of 197%; the classification is in the "More" category.

Table 6 – Distribution of Protein Intake of Students

No	Category	Frequency	%
1	Good	2	7
2	Not enough	1	3
3	More	27	90
Amount		30	100

Based on the percentage, the results show that the protein intake (X3) of students in the "Good" category is two students, getting 7%. In the "Poor" category, one student had 3%, and in the "More" category, 27 got 90%.

Table 7 – Results of Data Analysis on Nutritional Status

No	Name	JK	BMI	Nutritional Status (Y)	Category
1	Affan Alfatan	L	27.71	2,4	Obesity
2	Anggia Yurna	P	20.36	- 0.3	Normal
3	Asmatur Rahmi	P	19.56	- 0.5	Normal
4	Edi Saputra	L	17.13	-1.6	Normal
5	Evi Santi	P	24.09	0.9	Normal
6	Ferri Nazirah	P	17.8	- 1.1	Normal
7	Hafsah Aulia	P	20.59	- 0.08	Normal
8	Khairi Putri	P	24.13	0.9	Normal
9	M Khafiz	L	18.52	- 0.9	Normal
10	M Lutfi	L	17.66	- 1.4	Normal
11	M Rafiqul Ikhwan	L	21.19	- 0.04	Normal
12	M Rama Saputra	L	23.49	0.9	Normal
13	Maulidin	L	18.51	- 1.1	Normal
14	Muarif	L	25.47	1.3	Normal
15	Munawarah	P	17.51	- 1.3	Normal
16	Nadilla	P	15.85	- 1.7	Normal
17	Nurhayati	P	18.49	- 0.9	Normal
18	Nurkomariah	P	19.15	- 0.7	Normal
19	Nurul Azmi	P	26.09	1.4	Normal
20	Pipit Agustina	P	24.14	0.9	Normal
21	Risqi Aulia's son	L	18.14	- 1.3	Normal
22	Rahmat Fikri	L	17.64	- 1.5	Normal
23	Reviani	P	14.69	- 2.4	Thin
24	Reza Syuhada	L	18,19	-1.2	Normal
25	Rika Aulia	P	22,23	0.3	Normal
26	Syifa Alya	P	24.73	1.1	Normal
27	Tsaniyah	P	20.21	- 0.1	Normal
28	Wilda Cahyani	P	18.48	- 0.9	Normal
29	Zahratul Riefa	P	16.69	- 1.6	Normal
30	Zidane	L	17.09	-1.7	Normal
Total				-12.12	
Average				-0.4	Normal

Based on the analysis above, it can be explained that the average value of the nutritional status of students at SMA Negeri 1 Baitussalam, Aceh Besar Regency, is 0.4. If these results are seen in the table of nutritional status and body mass index categories, the classification is by the "Normal" category.

Table 8 –Distribution of Nutritional Status of Students

No	Nutritional Status Category	Frequency	%
1	Very thin	0	0
2	Thin	1	3.33
3	Normal	28	93.33
4	Fat	0	0
5	Obesity	1	3.33
Amount		30	100

Based on the results in the nutritional status distribution table above shows that the nutritional status (Y) of students who have the category "Very thin and fat" gets a percentage value of 0%, and for the "Skinny" category, one student gets 3. 33%, in the "Normal" category 28 students with 93.33%, and in the "Obesity" category one student got 3.33%.

The average protein intake results were in the excess category, and the average nutritional status obtained was in the normal category. Based on the researcher's assumption that other factors determine the category of nutritional status, the level of physical activity from light to heavy, food availability, appetite, the presence of various diseases, socioeconomic and educational levels, the body's metabolic system, the digestive system or the level at which the body can absorb food,

consumption patterns, nutritional knowledge or other factors others not examined in this study.

If protein consumption is good for the body, it can be used as a building block, and protein is also a material for forming new tissues, which always occurs in the body.

CONCLUSIONS

Based on the results of the data analysis, it can be concluded as follows:

1. Carbohydrate intake with an average nutritional status of 0.4 in the "Normal" category obtained an average value of 299 grams with a threshold value of 81% in the (Good) category, based on the percentage in the "Good" category, namely 16 students with 53%, in the "Less" - eight students with 27% and the "More" - six students with 20%.

2. Fat intake with an average nutritional status of 0.4 in the "Normal" category obtained an average value of 127 grams with a threshold of 143% in the (More) category. In the "Good" category, there are four students with 13%. In the "Less" category, nine students with 30%, and in the "More" category, 17 students with 57%.

3. Protein intake with an average nutritional status of 0.4 in the "Normal" category obtained an average value of 130 grams with a threshold value of 197% in the (More) category. In the "Good" category, there are two students with 7%. In the "Less," one student has 3%, and the "More" has 27 students with 90%.

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