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Faktor-Faktor yang Mempengaruhi Tingkat Asupan Gizi dan Praktik Makan pada Remaja Putri Usia 15–19 Years di Pedesaan Jawa Tengah

Factors Influencing the Dietary Intake and Eating Practices among Adolescent Girls Aged 15-19 in Rural Area Central Java

Zahroh Shaluhiyah[1], Ratih Indraswari[1], Aditya Kusumawati[1]

ABSTRAK

Latar Belakang: *Perilaku makan tidak sehat dan tingkat asupan gizi yang tidak seimbang yang dilakukan oleh perempuan sejak remaja dapat memberikan dampak kesehatan jangka pendek maupun jangka panjang saat dewasa. Dampak tersebut dapat mempengaruhi kesehatan remaja sepertii anemia, kekurangan energi kronik yang berpengaruh terhadap kesehatan pada saat menjadi ibu. Penelitian ini bertujuan untuk menganalisis asupan nutrisi remaja putri umur 15-19 years di pedesaan Kabupaten Wonogiri dan faktor-faktor yang mempengaruhinya.*

Metode: *Penelitian ini merupakan studi observasional dengan menggunakan pendekatan cross-sectional yang melibatkan 93 remaja putri usia 15-19 years dari 129 remaja di Kelurahan Jatipurwo pada bulan Mei 2019. Sampel dipilih secara proporsional random sampling. Data dikumpulkan dengan menggunakan kuesioner melalui wawancara oleh enumerator dan dianalisis secara univariat, bivariat dengan Chi-Square dan multivariat dengan regresi logistik.*

Hasil: *Tingkat asupan gizi remaja kebanyakan kategori kurang seimbang, dengan tingkat kecukupan energi yang defisit baik angka kecukupan karbohidrat, protein, dan lemak. Tinggi badan rata-rata remaja 155 cm dengan range 132-165 cm. Kebanyakan remaja mempunyai LILA yang kurang dari 23,5cm. Sosial ekonomi keluarga termasuk menengah ke bawah cenderung memiliki kebiasaan makan dengan nilai gizi di bawah kecukupan, baik jumlah maupun mutu serta variasinya. Minimnya ketersediaan makanan di tingkat keluarga membuat remaja mempunyai tingkat asupan yang asal memenuhi rasa lapar saja.*

Kesimpulan: *Berdasarkan seluruh variabel yang diuji, tidak ada satupun yang mempengaruhi tingkat asupan energi dan pola makan remaja. Oleh karena itu penelitian ini menyarankan perlunya peningkatan ketahanan pangan di tingkat keluarga dan diberikan edukasi kepada remaja tentang asupan makanan seimbang serta pola makan sehat untuk masa depan mereka.*

Kata Kunci: *Remaja Putri, asupan gizi, praktek makan, sosial ekonomi rendah, Pedesaan, Jawa Tengah*

ABSTRACT

Background: Unhealthy dietary practices and imbalance dietary intake during adolescence will be implicating to their nutrional status. The short term effects such as anemia, chronic energy deficiency, or other diseases during adolescence will be leading to poor health outcomes. This study aims to analyze dietary intakes and practices of adolescent girls aged 15-19 years in rural Central Java.

Method: This was an observational study with cross-sectional approach, involved 93 adolescent girls aged 15-19 who were selected with proportional random sampling. This study has been conducted from May to August 2019 in Jatipurwo village in Wonogiri Central Java. Data was collected by trained enumerator using face to face interviews using validated questionnaire. Data was analyzed by Univariate, bivariate using Chi-Square and multivariate (multiple logistic regression using backward stepwise).

Results: Nutritional intake of adolescent girls were categorized as unhealthy dietary habits and imbalanced nutritional intake. It was showed that most of adolescent girls have deficit of energy intake including low carbohydrate, protein and fat. The average height of adolescents was 155 cm in which BMI less than 23.5 cm. As Low socio-economic status, most of adolescents tend to have eating habits with low nutritional value both in terms of quantity and quality as well as food variations. Lack of food availability at their family level makes adolescent girls have no choice to eat better food.

Conclusion: There was not any variable influence on dietary intake of adolescent girls. It is recommended that the need for increasing food security at the family level and improve awareness of adolescent girls about healthy eating.

Keyword: Adolescent Girls, Dietary Intake, Dietary Practices, Low Socio-Economic Status, Rural Area, Central Java

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INTRODUCTION

Non-communicable diseases (PTM) are the center of serious concern mentioned in the SDG's third goal, which is to ensure the well-being and health of people's lives. This is based on changes in people's lifestyles, which have an impact on the increase in the incidence of obesity, degenerative diseases and other non-acute diseases. Risksdas reports in 2007 and 2013 showed that the prevalence of stroke increased from 8.3 to 12.1, and 61% of the total deaths were caused by cardiovascular disease, cancer, diabetes and PPOK.[1]

According to 2016 data, as many as 36 million people die every year, 71% of which are caused by PTM. WHO also pointed out in 2018 that up to 73% of deaths are currently caused by PTM, including heart disease (35%), cancer (12%), chronic respiratory diseases (6%), diabetes (6%), etc. (15%). It is believed that the diet of young people is low-fiber and high-fat (such as fried foods), which is one of the factors leading to the high incidence of non-communicable diseases in adults and the doubling of the disease burden in Indonesia. The increase in the incidence of PTM in adulthood is consistent with the increase in risk factors for unhealthy diet and lack of physical exercise.[2]

In order to provide good eating habits for communities including young people through proper nutrition, the government launched the Healthy Living Community Campaign (GERMAS) program, which aims to cultivate a healthy lifestyle, focuses on exercise, and increases the consumption of three activities fruit And vegetables and check. Healthy period, so that people can be responsible for the health of themselves, their families and society.[3]

In order to optimize prevention and promotion efforts in the community, the role of independent millennials needs to be strengthened to achieve the best personal health. Adolescence is a period of rapid physical and psychological growth and development. At this time, young people are full of curiosity, such as challenging adventures, or even daring to take risks, without careful consideration and understanding.[4] If these teenagers' decisions are incorrect, it is likely that they will fall into unhealthy behavior or lifestyle. Since puberty, this unhealthy lifestyle includes an imbalanced diet, which affects the physical and mental health of young people, especially in terms of physical shape.

Previous studies have explained that as many as 97.5% of teenagers' insufficient energy levels are due to the process of burning carbohydrates, protein and fat. The results of this study indicate that teenagers' intake of carbohydrates, protein and fat is very low.[5] Eating habits will greatly affect the satisfaction of people's nutritional needs, so the quantity and quality of food eaten will affect health. Previous studies also explained that although vegetables are a food that belongs to the four pillars of the principle of balanced nutrition, vegetables are usually not the main food consumed by teenagers..[6] Recognition and understanding of the importance of nutritional intake is one of the factors leading to dietary changes. (5) The age at which adolescents pay attention to their bodies and build their body image when others see them.[7] Many teenagers adopt inappropriate or unhealthy eating habits. In addition, teenagers who are dissatisfied with their body shape will try to achieve the ideal body shape.[8] In a study by the University of Madrid, although 234 respondents were still in the normal BMI category, 47.9% still wanted to lose weight. Teenagers have an ideal feeling of slim body, so they worry excessively about their weight. This allows them to adopt unhealthy eating habits to make their bodies look more attractive.[9] The body mass index (BMI) is a level that obese and normal adolescent girls want to lose weight. This shows that their body image is negative.[10] This of course affects diet and nutritional intake, and thus affects the nutritional status of young people. Research on the nutritional intake level of adolescents in rural areas shows that compared with rural areas, the nutritional intake level of adolescents is higher, and the change is not significant, although it is not statistically significant. This is because in cities, the availability of food is more diverse.[11] This study aims to analyze the factors that influence the nutritional intake of adolescents in rural areas of the Wonogiri Regency.

METHODS

This study was an observational study using a cross-sectional method to study rural youth in Jatipurno County, Wonogiri Regency District, from May 2019 to October 2019. The sample size was calculated according to the Lemeshow formula.[12] Therefore, a sample of 93 female respondents aged 15-19 years from 129 adolescents was obtained. The selection of respondents was done by using proportional random sampling techniques. There were 8 small villages, and the number of teenagers in each small village was the respondent: Dukuh Kuncen 9 teenagers, Dukuh Blumbing 13 teenagers, Dukuh Salaman 13 teenagers, Dukuh Tandan 15 teenagers, Dukuh Kopen 13 teenagers, Dukuh There are 9 teenagers in Kendung, 10 teenagers in Dukuh Pagutan and 11 teenagers in Dukuh Pelang.

The data was collected using questionnaires distributed to respondents by surveyors (community nutrition alumni who had just graduated). Previously, the questionnaire had been tested for validity and reliability in other areas with relatively the same characteristics outside

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the study area. There was no use insignificant (>0.05) problem. There were 25 effective items out of 35 items of knowledge variables, 12 effective items out of 19 items of attitude, and the attitudes of all friends were effective (12 items). The reliability test shown that the Cronbach Alpha value of the variable of knowledge and attitude of friends was 0.84, while the attitude of adolescents was 0.65, which means that all the results were reliable. The measured nutritional variables include the level of nutritional intake through the 24-hour recall and the food frequency (FFQ) that determines the eating habits of the last month. This was measured using a questionnaire consisting of about 100 foods. The interviewer consumes certain foods daily, weekly and monthly, so it can be hypothesized to be used as a predictor of nutritional or non-nutrient intake. In addition, they qualitatively asked the teenagers the reasons for skipping breakfast or eating less. At the same time, last month's physical activities were only measured by the respondents' physical activities once a week, 30 minutes a week, at least 3 times a week (if 3 times every 30 minutes, then classified; if less than 3 Times, it is classified and never classified)). Classify variables such as knowledge, attitudes, friend attitudes, and household food supply in the last two days according to the average. If the variable was higher than the average, it was a good category, and if it was equal to or lower than the average, it was a lesser category. The characteristics of adolescents were also collected, including demographic data, weight, height, body mass index (BMI), upper arm circumference and blood pressure. Then, analyze the data by univariate test to determine the distribution frequency of each variable, including the average score and standard deviation. The energy adequacy (nutrient) level was calculated by dividing the total energy consumption by the 2019 standard RDA and multiplying by 100%. If it is less than 70%, it was classified as insufficient energy, and if it is greater than or equal to 70%, it was classified as a good energy sufficiency level.[13] At the same time, the bivariate test used the chi-square test to determine the relationship between the independent variable and the dependent variable, and then uses the backward stepwise method to completely put all the variables together, and analyze the variable through multiple logistic regression. This research protocol has been approved by the Ethics Committee of the School of Public Health of Diponegoro University No. 14/EA/KEPK-FKM/2019.

RESULTS AND DISCUSSION

It can be seen from Table 1 that compared with the respondents over 16 years old (32.3%), there were more respondents under 16 years old (67.7%) in this study. The youngest age was 15 years old, the oldest is 19 years old, and the average age was 16.28 years old. In addition, there were more young people with a high school degree or above (84.9%) than those with a junior high school education (15.1%), and most of them are still students, up to 92.5%. The remaining 7.5% were young people who are already working.

Table 1. Characteristics of Respondents

Characteristics	n	%	
Age			
≤16 years	63	6.,7	Min = 15 years
>16 years	30	32.3	Max = 19 years
Education			
Junior High School and Below	14	15.1	
Senior High School and Above	79	84.9	
Status			
Student	86	92.5	
Non Student	7	7.5	
LILA			
> 23,5	36	38.7	
≤ 23,5	57	61.3	
Height			
≤ 155 cm	47	50.5	Min = 132 cm
> 155 cm	46	49.5	Max = 168 cm
Weight			
≤ 47 kg	48	51.6	Min = 35 kg
> 47 kg	45	48.4	Max = 72 kg
Father's Education			
Junior High School and Below	66	71.0	
Seenior High School and Above	27	29.0	

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Characteristics	n	%
Mother's Education		
Junior High School and Below	76	81.7
Senior High School and Above	17	18.3
Father's Job		
Farmer or Laborer	31	33.3
Non-Farmer or Laborer	62	66.7
Mother's Job		
Farmer or Laborer	28	30.1
Non-Farmer or Laborer	65	69.9

The size of LILA teenagers exceeds 23.5 cm (61.3%). Similarly, more than half of adolescents were less than or equal to 155 cm tall (50.5%). The average height was 155.62 cm, and the median was 155 cm. In addition, the shortest height was 132 cm and the tallest were 168 cm. Most of the respondents in this study weighed under 47 kg (51.6%), with an average weight of 47.19 kg. Compared with those with high school education and above (father = 29%; mother = 18.3%), parents' education levels were more likely to complete junior high school and below (father = 71%, mother = 81.7%). Parents work more than non-farmers/unskilled labor (father = 66.7%; mother = 69.9%) than farmers (father = 33.3%; mother = 30.1%). Therefore, all adolescents in this study can be classified as families with medium to low socioeconomic status.

Table 2 explained that in this study, the energy adequacy level of adolescents falls more into the deficit category accounted for 64.4% of adolescents and 35.6% of good adolescents. Nutritional Adequacy Ratio (RDA) was the average daily intake of total carbohydrates, including carbohydrates, protein, fat, etc., based on age, gender, weight, and physical activity to achieve the best health level.[14] The average energy and protein sufficiency of the Indonesian population is 2,150 kilograms of calories and 57 grams per person per day.[15] Deficit energy adequacy level refers to an energy adequacy level with an RDA lower than 70%, and a good energy adequacy level was a percentage of which the RDA exceeds 70%. The results of this study indicate that the nutritional adequacy rate of the adolescents in the study area was at a low level. This was because in addition to the socio-economic level of the family, most young people are in the middle and lower status, so the level of food consumption of young people has not changed much, and the number and frequency are also small. Most families with medium to low financial status usually skip breakfast before going to school or work. This was also supported by previous research, which also found that rural adolescents had poorer eating habits than adolescents who live in urban areas and have appropriate and diverse eating habits. In addition, teenagers eat irregularly and do not like vegetables and fruits.[16]

Table 2. Adequacy of Energy Adolescent Girls

Adequacy Level of Nutrients	Energy	
	n	%
Deficit	103	64,4
Good	57	35.6
Total	93	100

The FFQ results also showed that almost all respondents (98.8%) often eat rice 3 times a day, and only 17.5% of them like to eat bread. Usually, most teenagers do not eat breakfast at home, but they eat snacks at school during the morning break, so most of them contain rice. At the same time, fried foods, such as fried beans, fried tofu, etc., were usually eaten as a side dish at lunch. Most respondents often eat non-nutritive foods (junk food/fast food), and almost most respondents (70%) eat fast food frequently (almost every day), such as instant noodles, meatballs, sausages and other convenience foods sold at street vendors. Most people also rarely eat fruits and vegetables. Most of the fruits they eat were only those that were available in the season, such as mango, papaya and orange. In the normal category, as many as 62.4% of adolescents have BMI, in the underweight category, their BMI accounts for 34.4%, while the rest (3.2%) are overweight. At the same time, the most consumed protein source is soybean eh (47.5%), followed by tofu (46.5%) and eggs (25%). At the same time, few young people eat chicken (5.6%), and most of them eat up to 3 times a week. Most teenagers rarely eat vegetables, or sometimes eat up to 3 times a week, and only a few people regularly eat vegetables, including spinach (1.67%), water spinach (1.8%), carrots (1.25%) and cabbage. (0.65%).

Generally, young women want to have an ideal body, so usually many young women eat strictly. Of course, this will lead to a reduction in the balanced and nutritious food that young people get, resulting in energy and nutrient

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intake below the recommended nutritional adequacy rate (RDA), which leads to a decline in nutritional status.[16] Other studies also explained that dissatisfaction with body shape can lead to eating disorders, which are often experienced by teenagers who want to look slim all the timE[(17)]. Unbalanced nutrition among young people will affect their health in the future [(17)].

For young women, eating healthy food was very important in preparing for pregnancy. Undernutrition in young women can lead to anemia, which can lead to premature delivery of babies. Anemia can also lead to unsatisfactory growth of the fetus, leading to incomplete organ development. In addition to anemia, malnutrition in young women may also cause KEK or chronic energy deficiency. KEK during pregnancy may cause maternal death.[174] In addition to providing nutrition for young women, young men also need to pay attention to food intake to supplement nutrition from an early age. In young people, eating food can affect their reproductive maturity. In young people who regularly eat high-cholesterol foods, it can cause hypercholesterolemia, which affects the incidence of infertility by 30% to 40%. In addition, it can also affect sperm quality, including decreased semen volume, decreased sperm count, and decreased motility and viability[18].

It can be seen from Table 3 that in the carbohydrate adequacy level of adolescents, there were less (76.9%) more than good (20%) or more (3.1%) categories. Similarly, adequate levels of protein (34.4%) and fat (72.5%) are classified as poor or high. Energy was one of the products of carbohydrate, protein and fat metabolism.[19] As shown in Table 2, most adolescents have insufficient levels of energy, which was 64.4% compared with good kids (35.6%).

Table 3. Distribution of The Frequency of Adequacy of Carbohydrates, Proteins and Fats

Adequacy Level of Nutrients	Carbohydrates		Proteins		Fats	
	n	%	n	%	n	%
Less	123	76.9	55	34.4	116	72.5
Good	32	20	54	33.8	23	14.4
More	5	3,1	51	31.9	21	13.1
Total	93	100	93	100	93	100

The cross-tabulation of demographic characteristics and energy adequacy rate (Table 4) shown that compared with the age category of under 16 years (equal to 47 years), adolescents with insufficient energy adequacy levels were more likely to be adolescents over 16 years old (63.3%). 6%), although there was no statistically significant correlation (p value 0.156). This means that adolescents 16 years and older have less nutritional intake than early adolescents. This may be because young and middle-aged adults have usually started to make their own food choices and are more independent in making choices. At the same time, young children still follow the behaviors shown by their parents, family habits and environment.[20] This was different from previous studies, which pointed out that adolescents with poor eating behaviors have a higher proportion of respondents between the ages of 12 and 14 (83.1%) compared with those aged 15-16.[21]

Table 4. Cross-tabulation of Characteristics with Sufficient Level of Energy

Variable	Deficit		Good		Total		ρ-value
	n	%	n	%	n	%	
Years							
≤ 16 years	30	47.6	33	52.4	63	100	0.156
> 16 years	19	63.3	11	36.7	30	100	
Height							
≤ 155 cm	24	51.1	23	48.9	47	100	0.751
> 155 cm	25	54.3	21	45.7	46	100	
Weight							
≤ 47 kg	24	50	24	50	48	100	0.592
> 47 kg	25	55.6	20	44.4	45	100	
Education							
Less than senior high school	9	64.3	5	35.7	14	100	0.046
Senior high school or above	40	50.6	39	49.4	79	100	
Status							
Student	44	51.2	42	48.8	86	100	0.264
Non Student	5	71.4	2	28.6	7	100	

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Variable	Deficit		Good		Total		p-value
	n	%	n	%	n	%	
Father's Education							
Junior High School and Below	33	50	33	50	66	100	0.417
Senior High School and Above	16	59.3	11	40.7	27	100	
Mother's Education							
Junior High School and Below	42	55.3	34	44.7	76	100	0.293
Senior High School and Above	7	41.2	10	58.8	17	100	
Father's Job							
Farmer or Laborer	15	48.4	16	51.6	31	100	0.557
Non Farmer or Laborer	34	54.8	28	45.2	62	100	
Mother's Job							
Farmer or Laborer	15	53.6	13	46.4	28	100	0.911
Non Farmer or Laborer	34	52.3	31	47.7	65	100	
History of Disease							
There is	13	50	13	50	26	100	0.746
Nothing	36	53.7	31	46.3	67	100	
Blood Pressure							
Abnormal	6	60	4	10	10	100	0.877
Normal	43	51.8	40	48.2	83	100	
LILA							
≤ 23.5	31	54.4	26	45.6	57	100	0.680
> 23.5	18	50	18	50	36	100	

Compared with adolescents whose height was less than or equal to 155 cm and a p-value of 0.751, the adolescents whose height exceeds 155 cm (54.3%) have insufficient levels and adequacy of nutritional intake. vitality. Similarly, for the weight variable, adolescents weighing more than 47 kg have a higher level of energy deficiency, that was, as much as 55.6%, while adolescents weighing less than or equal to 47 kg have an energy deficiency level of up to 50%, with a p value of 0.591. , There was no relationship between body weight and energy adequacy level. Although there was no statistically significant correlation, it shown that a good height and adequate weight do not indicate a good or balanced level of nutritional intake. This was because eating behavior is affected by internal factors such as adolescents' physical and psychological factors. In addition, the way of eating was also affected by external factors that affect the thinking of young people, including trends, youth culture, economy, social norms, knowledge, media or advertising. In addition to the peer factor, there was also a family role that affects the behavior of adolescents, which cannot be ignored. As Almatsier said, both friends and parents affect the habits and characteristics of the child, including eating habits.[22] Parents have the responsibility to provide children with ideas and social pressure, and these ideas and social pressure are important determinants of supporting and maintaining a healthy diet.[23]

Girls usually start to think and are more sensitive to changes in size, body shape and appearance. Therefore, adolescents often have unhealthy eating habits, such as strict diets, reducing food intake by skipping breakfast, and keeping hunger, so that the adolescents remain slim.[24] Consistent with a study conducted in Jakarta with 300 female respondents aged 22-35, 60% of women suffer from diseases due to irregular eating habits because they avoid dieting for breakfast..[25] The relationship with this study was that teenagers with weight gain and reduced energy expenditure may be due to their desire to have a slim or ideal body based on their thoughts or opinions.

In terms of education level, the junior high school education level of adolescents with insufficient energy levels was more likely to be lower (64.3%), with a p-value of 0.046. There was a relationship between the level of education and the energy adequacy level of adolescents. This result was consistent with previous studies, which pointed out that there was a strong correlation between education level and health status. Continuous and healthy education time (years) will have a positive impact, because

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the length of the school year can develop effective living abilities, thereby affecting health.[26] The stated based on "*Human capital theory and status attainment model*".[27] The school provides general skills especially related to cognition, special skills useful for work, social values and even behavior.[28] Higher education teaches people to think more rationally and rationally, and to look at problems from all angles, so that they can analyze and solve problems more easily. In addition, higher education improves the cognitive skills necessary to continue learning outside of school.[29]

In addition, fathers with a high school education level or higher (59.3%), and mothers with a junior high school education level or below (55.3%) have higher levels of energy deficiency when working as fathers (54.8%) and mothers. . It was also a laborer (53.6%). The education level of the father as the head of the family affects the way parents raise their children. In addition, the education level of the father will also affect the type of father's work, and will affect the family's economic level, which will also affect the parents' ability to meet the needs of the family. However, having to work because he is busy with the head of the family may make the father less concerned about his children's diet. At the same time, the mother's education level will be related to the mother's knowledge and understanding of health. This may affect the parenting style, nutritional adjustment and food type selection.[30] Therefore, the higher the mother's education, the higher their awareness of nutritional realization, and vice versa..[29]

Eating habits can also be determined according to the economic level. Communities with strong economic strength tend to have a variety of eating habits, with average consumption exceeding their sufficient level. On the other hand, people with the weakest economy usually have eating habits with nutritional value lower than sufficient quantity and quality.[31] This was in line with Suhardjo's research, which stated that the diet of people with weak financial resources was sufficient to relieve hunger.[32] Rahman's research on high school students in Palu also supports this, that was, there was an association between parental income and adolescent eating behavior ($p < 0.05$).[33]

The study also showed that among respondents without medical history (53.7%), adolescents with abnormal blood pressure (60%), and adolescents with LILA less than or equal to 23.5, the adequate level of energy deficiency was higher. Cm (54.4%). Previous studies have shown that there was a significant relationship between the intake of energy, protein and fat and the size of the upper arm circumference other than carbohydrates. Malnutrition, especially KEK, still occurs in adolescents due to misunderstanding of nutrition and health and body image or lack of access to healthy food.[34] The circumference of the upper arm or LILA describes the availability of nutrients in the muscles and the availability of fat under the skin.[35] Energy reserves can be stored in the form of glycogen, one of which is present in the muscles, while excess other macronutrients are present in the form of adipose tissue, which was present in the fat under the skin, so the upper arm can be used as a view An indicator of a person's past nutritional intake history.[36] Other studies have also shown that muscle mass was affected by the level of energy and protein adequacy, that was, adequate energy and protein deficiency lead to a decrease in muscle mass.[37]

Table 5 explained that the frequency of exercise (less or only once a week) for most adolescents in the study was as high as 89.2%. The remaining 3.2% were in the "frequent" category (3 or more times a week), while 7.5% have never been. Most of the interviewees participate in sports because they are obligated to attend PE classes in school, while the rest do not or rarely do sports themselves. Exercise or physical exercise can help accelerate the body's metabolism. Lack of exercise and physical exercise can lead to non-communicable diseases such as diabetes and cardiovascular disease. Non-communicable diseases usually begin to appear in early adulthood. However, during its development, the disease began to suffer from early adulthood.[38] The results of this study show that among those who do not exercise, adolescents with insufficient carbohydrate, protein and fat intake are more common than those who do not exercise regularly.

Table 5. Respondents' Sports Behavior

Frequency Sports	n	%
Often	3	3.2
Sometimes	83	89.2
Never	7	7.5
Total	93	100.0

According to the knowledge and attitude variables about balanced diet and its impact on health, Table 6 shown that adolescents with higher levels of energy deficiency are those with poor knowledge (55.6%) and those with poor attitudes (54.8%)) Better than one. Although in this study, the knowledge and attitudes of adolescents have nothing to do with nutritional intake, the cross table shown that adolescents with good knowledge and attitudes have higher levels of good nutritional intake. Nutritional knowledge will affect the attitude and behavior of food choices, which in turn will affect the individual's nutritional status. The higher a person's nutritional knowledge, the better their nutritional status was expected. As Sulistyoningsih said, nutritional knowledge is the foundation for young people to master nutritionally balanced foods. Adolescents of this age need to take in a balanced nutrition according to the needs of adolescents in order to achieve optimal growth and development.[39] Another opinion from Notoatmodjo said

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that someone who was good will have good practice if there are supporting factors or possible conditions. In line with the results of this study, there were more respondents with a sufficient energy deficit level who had bad knowledge and bad attitudes as well, although these two variables were also not significantly related to the energy adequacy level.[40] As with knowledge, attitudes in this study also affect adolescent behavior in choosing food. In accordance with the research by Wowor that there was a relationship between the attitude of the respondents and the behavior of choosing healthy snacks in Jombang.[41] Abdurrachim explained that a positive attitude towards food and nutrition will be formed if they have sufficient nutritional knowledge.[42] So this was in accordance with this research that good nutritional knowledge will result in a person having a good attitude in choosing food, henceforth being able to behave well in addition to nutrition for theirself.

Table 6. Cross-tabulation between Knowledge, Attitudes and Attitudes of Friends with the Sufficiency Level of Energy

Variable	Deficit		Good		Total		ρ-value
	n	%	n	%	n	%	
Knowledge							
Bad	20	55.6	16	44.4	36	100	0.66
Good	29	50.9	28	49.1	57	100	
Attitude							
Bad	17	54.8	14	45.2	31	100	0.769
Good	32	51.6	30	48.4	62	100	
Attitude of Friends							
Bad	20	52.6	18	47.4	38	100	0.993
Good	29	52.7	26	47,3	55	100	

Among all the variables included in the multivariate analysis, none of the variables have an effect on the energy adequacy level of the interviewee, as evidenced by a p-value greater than 0.05. (Table 7). This was possible because there are other factors that have not been tested in this study, such as the availability of food at the household level of adolescents and the diversity of food in rural areas, and these factors vary greatly in the environment. small.[40]

Table 7. Results of Multivariate Analysis Between Independent Variables which Include Demographic Characteristics, Knowledge, Attitudes, Attitudes of Friends, Physical Activity Towards Adolescent Eating Patterns (Energy Adequacy Level)

Variable	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Father's Education	1.021	0.621	2.701	1	0.100	2.775	0.822	9.371
Mother's Education	-1.269	0.715	3.145	1	0.076	0.281	0.069	1.143
Constant	0.196	0.507	0.150	1	0.698	1.217		

RESEARCH LIMITATIONS

This study was only conducted in Jatipurwo village in the Jatipurno district of Wonogiri regency. The village was selected on purpose, so it may not be extended to other areas that may have different regional characteristics from the study area. The study also uses only 24 hours of food recall to measure energy intake, so it cannot describe daily food intake. In addition, food recall is very dependent on the memory of the interviewee. The physical activity measured was only the physical activity of the respondent, not the daily physical activity.

CONCLUSION

In conclusion, the only factor associated with nutritional intake among adolescent was the education level, while knowledge and attitude were not. This study shows that there is a need to change adolescents' behavior in terms of increasing a balanced nutritional intake of carbohydrates, protein, and fat. It is enough to increase the family economy at the village level so as to provide a variety of food for the adolescent family. In addition, it is necessary for young women to understand healthy and balanced eating habits in order to maintain their health in the future.

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