

The Relationship Between Energy and Protein Intake with The Nutritional Status of Children Aged 7-18 Years at Griya Sahabat Yatim Dhuafa in Gedangan Sidoarjo

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ARTICLE INFO

Article History:

Received August, 16st, 2023

Accepted April, 29th, 2024

Published online May, 3rd, 2024

Keywords:

Energy;

Protein;

Nutritional Status of School Age

Children;

ABSTRACT

At the age of 7-18 years, consumption of carbohydrates as a source of energy and consumption of protein sources greatly affects their nutritional status. There are several foster children at GSY Dhuafa who are facing nutritional problems due to insufficient nutrition from food that is rich in energy and protein content. This study aims to determine whether there is a relationship between energy and protein intake with the nutritional status of foster children At GSY Dhuafa in 2023. Using a cross-sectional research method with a sample of 35 children using a total sampling technique. Data analysis in this study used univariate and bivariate analysis with the Chi-square test. From the research that has been done, the results show that there is a strong relationship between the adequacy of energy and protein nutrition and nutritional status ($p=0.000$), while protein intake has results ($p=0.354$), which means that there is no relationship between protein and nutritional status. There is a relationship between energy intake and nutritional status and there is no relationship between protein intake and the nutritional status of the respondents. It is expected to pay more attention to intake to meet nutritional needs in order to achieve good nutritional status.

INTRODUCTION

The physical and mental health of children must be influenced by the age of the child. Families should be the first to pay attention to their children's nutritional intake because the strong influence of nutrient-rich foods has a role on the development of the child's brain and other organs needed to help brain development and increase the child's thinking speed to be optimal. The level of family nutrition expertise is very important.¹ School-age children are the age at which they begin to enjoy playing, therefore they also need a lot of nutrients and energy due to high levels of physical activity. Children need a lot of food and energy to follow their active lifestyle. Parents face challenges in meeting their children's needs for healthy food.²

By 2030, the government has committed to making the Sustainable Development Goals (SDGs) their top priority to improve children's quality of life. Both national and regional governments are working on plans to achieve the goals. The elimination of poverty is one of the goals to be achieved. Factors such as home, school, and social status, all have an impact on child development and should be considered in any discussion of child poverty. A good environment for child growth will be created once poverty among children is eliminated, allowing for the fulfillment of education through early education.³

The years spent in school are the time of movement between youth and adulthood. There is a period of rapid progress. Increased muscle mass, increased body fat percentage, and hormonal changes are just a few of the physical changes that occur around this time. Growth causes physical changes that can impact a person's health and nutritional needs.⁴ The most important thing to be able to achieve your health goals is to maintain good nutritional health.⁵ But poor food quality and the amount of food that does not meet individual needs are still common in many parts of Indonesia, leading to various nutritional disorders and malnutrition.⁶

Physical development and health decline when people don't get the nutrients they need. Long-term nutritional deficiencies interfere with children's health, children's growth and development, infectious diseases, and children's speed of thinking can be caused by fatigue and malnutrition.⁷ Therefore, it is clear that poor nutrition is a widespread problem, and that all families need to take steps to improve their family's nutritional status.⁸ If you eat enough, it can increase activity levels without disrupting growth or nutritional status. The likelihood of becoming malnourished increases when the amount of nutrients obtained and food consumed daily is insufficient.⁹ Being malnourished or too thin can have a negative effect on reproduction.¹⁰

Based on Basic Health Research, 2018 that the prevalence of underweight of 9% consists of 2.2% very thin and 6.8% thin. Based on the data above, it can be seen that there was a decrease in the prevalence of underweight from 2013 to 2018, a decrease in the prevalence of underweight by 2.2%. East Java Province occupies the 8th position in Indonesia with a prevalence of 5.8%.¹¹

Three factors were identified as indirect contributors to the root of the nutritional problem through the analysis conducted. The first is the lack of food and the resulting malnutrition. Almost half of Indonesians (45.7%) have very low energy levels due to 70% AKE (Energy Satisfaction Rate); 36.1% of people had a very poor protein level of 80% PPA (Satisface Protein Rate), and 95.5% of people over 5 years of age had a diet of no more than 5 servings of fruits and vegetables per day.¹² Food availability is not a major cause of malnutrition; On the contrary, it is a lack of resources to buy food.¹³

Providing healthy food and good care can be the foundation as part of the family unit is the first step in raising Human Resources standards.¹⁴ The propensity of malnourished children is largely determined by community-level environmental factors such as hygiene, food intake, childcare patterns, and health services such as immunization.¹⁵ Even the most basic family unit can perform growth monitoring. However, some orphans and poor children who cannot make ends meet are forced to live or settle in orphanages. Therefore, caregivers in a foundation or orphanage must have good knowledge about balanced intake according to the needs of the body.¹⁶

There are several orphanages in Sidoarjo, one of which is Griya Sahabat Yatim Dhuafa.

Located on Jalan Singomenggolo 5, Kavling Ganting Asri, Ganting Village, Gedangan District, Sidoarjo Regency. Griya Sahabat Yatim Dhuafa is one of the orphanages that needs attention regarding the nutritional status of its foster children. Based on a preliminary study conducted at Griya Sahabat Yatim Dhuafa, it was found that as many as 40% of 20 children were included in the category of malnutrition. From the following description, researchers are interested in conducting research on "the relationship between energy and protein intake on the nutritional status of children aged 7-18 years at Griya Sahabat Yatim Dhuafa".

MATERIALS AND METHODS

This research uses a type of descriptive research. This research starts from November to March 2023 at Griya Sahabat Yatim Dhuafah. All groups in this study consisted of children aged 7-18 years, the sample consisted of 35 children.

The sampling technique uses total sampling. Data acquisition techniques are implemented primary and secondary. The primary data for this study were anthropometry, age and intake *recall* 2x24 hours. The secondary data of this study includes identity data of Griya Sahabat Yatim Dhuafah foster children aged 7-18 years.

Data analysis was tested with the help of electronic devices in the form of laptops and SPSS applications using the Chi-Square *test*. Data processing by displaying frequency distribution tables and cross-tabulations for each variable. Researchers wanted to know about the relationship between energy and protein intake with the nutritional status of children aged 7-18 years at Griya Sahabat Yatim Dhuafah.

RESULTS

Table 1. Characteristics of Foster Children at Griya Sahabat Yatim Dhuafa in 2023

Age (Years)	Frequency	Percentage
7-9	13	37.1
10-12	11	31.4
13-15	8	22.9
16-18	3	8.6
Total	35	100.0

Source: Primary Data, 2023

Based on the results of data collection that has been tested and obtained, the distribution of the age frequency of foster children in Griya Sahabat Yatim Dhuafa shows that the highest number is 7-9 years old which amounts to 13 children with a percentage of 37.1%.

Table 2. Characteristics of Foster Children at Griya Sahabat Yatim Dhuafa by Gender in 2023

Gender	Frequency	Percentage
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Male	22	62.9
Female	13	37.1
Total	35	100.0

Source: Primary Data, 2023

Based on the results of data collection that has been tested and obtained, the frequency distribution of the sex of foster children in Griya Sahabat Yatim Dhuafa shows that the number of girls is less than boys. Where the boys cared for by Griya Sahabat Yatim Dhuafa amounted to 22 children with a percentage of 62.9%.

Table 3. Age by Gender of Foster Children at Griya SYD Tahun 2023

Gender	Age (Years)								Total	
	7-9		10-12		13-15		16-18		N	%
	n	%	n	%	n	%	n	%		
Male	10	28.6	6	17.1	6	17.1	0	0	22	62.8
Female	3	8.6	5	14.3	2	5.7	3	8.6	13	37.2
Total	13	37.2	11	31.4	8	22.8	3	8.6	35	100

Source: Primary Data, 2023

Based on the results of data collection that has been carried out, cross-tabulation of ages based on the gender of foster children in Griya Sahabat Yatim Dhuafa shows that the number of boys aged 7-9 years occupies the highest percentage of 28.6%.

Table 4. Energy Intake Levels of Foster Children at Griya SYD in 2023

Energy Intake Level	Frequency	Percentage
Severe deficit	30	85.7
Moderate deficit	4	11.4
Mild deficit	1	2.9
Total	35	100.0

Source: Primary Data, 2023

Based on the results of data collection that has been carried out, the distribution of the frequency of energy intake in foster children at Griya Sahabat Yatim Dhuafa shows that the energy intake of 30 of the 35 children who have been studied is included in the Severe Deficit category with a percentage of 85.7%.

Table 5. Protein Intake Levels of Foster Children at Griya SYD in 2023

Protein Intake Level	Frequency	Percentage
Severe deficit	13	37.1

Moderate deficit	8	22.9
Mild deficit	9	25.7
Normal	5	14.3
Total	35	100.0

Source: Primary Data, 2023

Based on the results of data collection that has been carried out, the distribution of the frequency of protein intake in foster children at Griya Sahabat Yatim Dhuafa shows that protein intake of 13 of the 35 children who have been studied is included in the Severe Deficit category with a percentage of 37.1% and 22.9% is included in the moderate deficit category.

Table 6. Nutritional Status of Foster Children at Griya SYD in 2023

Nutritional Status Category	Frequency	Percentage
Malnutrition	4	11.4
Undernutrition	5	14.3
Good	20	57.1
Overnutriton	5	14.3
Obesity	1	2.9
Total	35	100.0

Source: Primary Data, 2023

Based on the results of data collection that has been carried out, the frequency distribution of nutritional status in foster children at Griya Sahabat Yatim Dhuafa shows that the highest number of respondents are in the malnutrition category by 11.4% and those in the undernutrition category by 14.3%.

Table 7. Nutritional Status of Foster Children at Griya SYD in 2023

Gender	Usia (Tahun)								Total	
	7-9		10-12		13-15		16-18			
	n	%	n	%	n	%	n	%	n	%
Malnutrition	2	5.7	2	5.7	0	0	0	0	4	11.4
Undernutritio n	1	2.9	1	2.9	3	8.6	0	0	5	14.3
Good	10	28.6	4	11.4	3	8.6	3	8.6	20	57.1
Overnutriton	0	0	3	8.6	2	5.7	0	0	5	14.3
Obesity	0	0	1	2.9	0	0	0	0	1	2.9
Total	13	37.2	11	31.4	8	22.8	3	8.6	35	100

Source: Primary Data, 2023

Based on the results of data collection that has been carried out, cross-tabulation of nutritional status based on the age of foster children in Griya Sahabat Yatim Dhuafa shows that the number of children who fall into the category of good nutritional status with the age of 7-9 years occupies the highest percentage of 28.6%.

Table 8. Relationship Between Energy Intake and Nutritional Status of Foster Children at Griya SYD in 2023

Energy Intake Category	Nutritional Status Category												P
	Malnutrition		Undernutrition		Good		Overnutrition		Obesity		Total		
	n	%	n	%	n	%	n	%	n	%	n	%	
Severe deficit	4	11.4	5	14.3	18	51.4	3	8.6	0	0	30	85.7	0.000
Moderate deficit	0	0	0	0	2	5.7	2	5.7	0	0	4	11.4	
Mild deficit	0	0	0	0	0	0	0	0	1	2.9	1	2.9	
Total	4	11.4	5	14.3	20	57.1	5	14.3	1	2.9	35	100	

Source: Primary Data, 2023

It can be seen in the table above that the results of the number of respondents who were included in the category of good nutrition with the category of energy intake Severe deficit got the highest number of 18 respondents with a percentage of 51.4%. From the data above, a correlation number is obtained using the *chi-square statistical test* and gets a p value result of 0.000.

Table 9. Relationship Between Protein Intake and Nutritional Status of Foster Children at Griya SYD in 2023

Protein Intake Category	Nutritional Status Category										Total	P	
	Malnutrition		Undernutrition		Good		Overnutrition		Obesity				
	n	%	n	%	n	%	n	%	n	%			
Severe deficit	2	5.7	3	8.6	6	17.1	2	5.7	0	0	13	37.1	0.354
Moderate deficit	0	0	2	5.7	4	11.4	2	5.7	0	0	8	22.9	
Mild deficit	1	2.9	0	0	7	20	1	2.9	0	0	9	25.7	
Normal	1	2.9	0	0	3	8.6	0	0	1	2.9	5	14.3	
Total	4	11.4	5	14.3	20	57.1	5	14.3	1	2.9	35	100	

Source: Primary Data, 2023

It can be seen in the table above that the results of the number of respondents who fall into the category of malnutrition with a Severe deficit protein intake are 5.7% and respondents who are

included in the category of more nutrition with a Severe deficit protein intake are also 5.7%. From the data above, a correlation figure was obtained using the *chi-square* statistical test , a *p value* of 0.354 was obtained.

DISCUSSION

Characteristics of Foster Children at Griya Sahabat Yatim Dhuafa in 2023

Most respondents fall into the age category of 7-9 years, amounting to 13 children. Where from the age of 7-18 years, Griya Sahabat Yatim Dhuafa's foster children are mostly dominated by boys. The nutritional needs of boys are different from those of girls. Boys do more physical activity, so they need more energy. Gender also has a relationship with nutritional status. This is related to differences in diet and nutritional intake between boys and girls. In schoolchildren, men tend to eat more food, allowing for more energy intake.¹⁷

At the age of school children is the age of determining the quality of generations who will continue the life of the nation which will continue to manage and be natural. In that generation, children will grow and develop according to their respective stages of growth and development.¹⁸ Child development will take place optimally if it develops in accordance with the phases and tasks of their respective development right at school age. At this age, the child experiences very rapid development. Child development also has its own distinctive patterns according to aspects of development. Some aspects that develop rapidly at school age are the language, emotional, and social development of children.¹⁹

Nutritonal Status of Foster Children at Griya SYD in 2023

Based on research that has been conducted on 35 respondents, respondents with malnutrition status were found to be 11.4%, respondents with undernourished status were 14.3%, respondents with more nutritional status were 14.3% and respondents with obese nutritional status were 2.9%. Respondents with the highest number of 20 children with a percentage of 57.1% fall into the category of good nutrition. This is supported by some foster children at Griya Sahabat Yatim Dhuafa who consume food as provided, which is complete with carbohydrates, animal protein, vegetable protein and vegetables as a source of fiber, even though the amount of fiber consumption is relatively small. In addition, the existence of compensation in the form of food on certain days in large quantities also supports good nutritional status in Griya Sahabat Yatim Dhuafa foster children. Children's lifestyles also affect in this case, there are those who consume excessive food but not balanced with heavy physical activity so that it can potentially cause obesity in respondents. In addition, there are also respondents who consume relatively small amounts of food due to lack of

appetite, and there are also those who have a lot of physical activity but consume little food. So that it affects the nutritional status of children which causes thin respondents.

In school-age children, malnutrition will cause children to become weak, tired and sickly so that children are often absent and have difficulty following and understanding lessons.²⁰ The state of nutrition will also affect the child's ability to follow lessons at school and will affect learning achievement, because one way to assess the quality of a child is to look at his learning achievement at school. Therefore, in addition to providing a balanced intake to improve children's nutritional status, intensive attention and monitoring is very helpful in improving children's nutritional status.²¹

Energy Intake Levels of Foster Children at Griya SYD in 2023

Thirty-five people participated in the study, and the results showed that those whose energy intake was classified as Severe deficit (30 people with an 85.7% presentation) consumed the greatest energy overall. There were 11.4% of respondents with moderate deficits in energy intake, and 2.9% with mild deficiencies. None of the participants in the study had an average or above-normal caloric intake, according to the data. Only those who have answered "Severe deficit" or "light deficit" will be included in the analysis.

The results of research conducted at Griya SYD show that the availability of food is almost always balanced due to the availability of carbohydrates, animal protein, vegetable protein, and fiber. But there are still many reasons why children cannot meet the intake as needed as they should. Some young children tend to be more concerned with taste than the intake they need. In addition, low intake is also possible because some foster children of Griya sahabat Yatim Dhuafa have skin diseases and this can cause decreased appetite causing malnutrition or other nutritional problems. Plus, in this study, namely the age of 7-18 years, some of which have light activity and some have very dense activity, so sometimes they do not prioritize the needs of intake in accordance with the provisions should be. In addition, because some foster children at Griya SYD who undergo full-day school but do not bring food, are only given milk and bread and pocket money. So that it is less able to monitor and meet children's intake during school, especially the adequacy of children's energy intake.

Protein Intake Levels of Foster Children at Griya SYD in 2023

Based on research conducted from 35 respondents, there were 37.1% of respondents whose protein intake was in the category of severe deficit, 22.9% included in the moderate deficit category, 25.7% included in the mild deficit category and 14.3% included in the normal category. The lack of protein intake in some respondents is due to restrictions on giving side dishes to foster

children who experience skin diseases in addition to the lack of variation in how to process animal protein intake, so that some foster children in Griya SYD choose to only consume carbohydrates with vegetables or replaced with carbohydrates in the form of instant noodle rice. Information about less variation in food processing is obtained from the types of processed food served and consumed in the results of the recall of foster children in Griya SYD.

Proteins play an important role structurally and functionally in all cells of living things as well as viruses. Most of these proteins are in the form of enzymes and/or enzyme subunits. In life, proteins play an important role, because in every chemical process in the body will take place well with the participation of enzymes as biocatalysts.²² Protein functions in transporting and storing other molecules such as oxygen, such as hemoglobin in erythrocytes, which act as oxygen binders in the bloodstream is also a protein. Similarly, substances that have a role against bacteria or disease and or as immune or antigens are proteins as well.²³

Relationship Between Energy and Protein Intake with Nutritional Status of Foster Children at Griya SYD

Based on research that has been conducted on the relationship between energy intake and nutritional status in foster children at Griya Sahabat Yatim Dhuafa using *the Chi square correlation test* to get p value results of $0.000 < 0.05$, it means that there is a relationship between energy intake and nutritional status based on measurements of height and child Severe. The results of this study are in accordance with research conducted by Mila Khairani et al (2021) which shows that based on the *Chi-Square test* that has been carried out on respondents, there is a significant relationship between energy consumption and nutritional status, which is 0.000. Energy intake indirectly affects the nutritional status of respondents.²⁴

In the relationship between protein intake and nutritional status in foster children at Griya Sahabat Yatim Dhuafa using *the Chi square correlation test* to get p value results of $0.354 > 0.05$, it means that there is no relationship between energy intake and nutritional status. In research conducted by Riska Kusumaningrum (2013) found no relationship between protein intake and nutritional status ($p = 0.404$, $r = 0.125$);²⁵ The results obtained in a study conducted by Mila Khairani et al (2021) show that there is a relationship between protein consumption and nutritional status of MA Darul Qur'an in 2021 with a p value of 0.005.

Protein is part of the living cell and is the largest part after water. All enzymes, various hormones, transporters of nutrients and blood, and so on are proteins. The main function of protein is to build and maintain body tissues. Another function is to help the body's essential bonds, such as hormones, enzymes and antibodies, regulate water balance and transport nutrients. Protein is also

a source of energy equivalent to carbohydrates. If the body is in a condition of lack of energy source substances namely carbohydrates and fats, then the body will use protein to form energy and defeat its main function as a building substance.

CONCLUSION

From the research conducted by researchers, it was concluded that the most energy intake was in the Severe deficit category, which was 85.7%. The highest intake of protein nutrients is in the Severe deficit category with a percentage of 37.1%. In energy intake with nutritional status in foster children at Griya Sahabat Yatim Dhuafa get p value results of $0.000 < 0.05$, it means that there is a relationship between energy intake and nutritional status. In protein intake with nutritional status in foster children at Griya Sahabat Yatim Dhuafa get p value results of $0.354 > 0.05$, which means there is no relationship between energy intake and nutritional status.

THANK YOU NOTE

The author acknowledges the help and inspiration he received in writing this article. In line with that, researchers conveyed many words of gratitude to Griya Sahabat Yatim Dhuafa located in Gedangan Sidoarjo.

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