ATLANTIS
PRESS

Relationship Breakfast Habits with Anemia Based on Hemoglobin Test Using Sianmethemoglobin Method on Adolescent Girls

1st Nasriyah
Prodi D3 Kebidanan
Universitas Muhammadiyah Kudus
Indonesia
nasriyah@umkudus.ac.id

2nd Tyas Putri
S1 Farmasi, Universitas Muhammadiyah
Kudus, Indonesia

Abstract—**Background Anemia is a condition that shows hemoglobin levels less than normal. At present anemia is still a health problem in Indonesia. The prevalence of anemia in Indonesia on adolescent girls is relatively high (23.90%) compared to adolescent men (18.4%). One of the cases of anemia in Indonesia is caused by the intake of foods containing iron. The purpose of this study was to determine the relationship between breakfast habits with the incidence of anemia on adolescent girls in junior high school and senior high school at the Mayong II public health center. The method this study used a cross sectional design, data taken from August to October 2019. The population this study were all adolescent girls in junior high school and senior high school at the Mayong II public health center, while the sample size was 227 respondents. The sample selection uses stratified random sampling technique. Statistical analysis using the Lamda test. The results of the study show that there is a relationship between breakfast habits with the incidence of anemia on adolescent girls with a p value of 0,000. Recommendations made for adolescent girls to get used to having breakfast that contains balanced nutrition and take iron tablets once a week when not menstruation and once a day when menstruation.**

Keywords—Breakfast, Habits, Anemia, Hemoglobin

I. INTRODUCTION

Anemia is a condition that shows that hemoglobin levels are less than normal. It is known that hemoglobin is responsible for spreading oxygen to all organs of the body. Currently anemia is still a health problem in Indonesia.[1] The prevalence of anemia in Indonesia in adolescent girls is relatively high (23.90%) compared to males (18.4%).[2] Adolescent girls are a high risk group experiencing anemia compared to young men, this is because the need for iron absorption in adolescent girls peaks at the age of 14-15 years, while young men the next two years. [3] Besides that, Adolescent girls also experience menstruation every month.[2][4]

Anemia is one of them caused by lack of intake of foods containing iron. Fulfillment of nutrition in daily food is one of the factors that influence adolescent growth and development. Anemia caAn occur in the short and long term, with mild to severe severity. Treatment for this condition varies depending on the cause.[5]

The main risk factors for iron deficiency anemia are low iron intake, poor absorption of iron, and periods of life when the need for iron is high, such as during growth, pregnancy, and breastfeeding. Other nutritional deficiencies such as vitamins A, B12, folate, riboflavin, and copper (Cu) as well as the presence of acute diseases and chronic infections such as malaria, cancer, tuberculosis, and HIV can also increase the risk of anemia.[6] Food consumption patterns are a direct factor in nutrient intake, which is not widely known by adolescents. [7]

Breakfast for school children has a very important role in meeting the nutritional needs in the body that are used for learning and thinking.[8]

If the nutritional needs in the body are not sufficient it can cause the body to experience nutritional deficiencies so that iron intake in the body is also reduced. Several studies have shown health education about nutrition can change behavior for the better.[9]

In addition, the addition of blood tablets to adolescent girl is also very supportive in preventing iron deficiency anemia. [10]

The impact of anemia on adolescent girls can contribute negatively to pregnancy later, during this pregnancy, adolescents who already suffer from anemia can experience more severe anemia during pregnancy has increased. This anemia condition can cause the birth of babies with low birth weight, morbidity and even death in both mother and baby.[11] Anemia also affects the physical and cognitive development of adolescents, so adolescents are easily tired and lack of concentration in learning this results in decreased learning achievement.

In addition to anemia of nutritional etiology, non-nutritional anemia is common in aging women, including those associated with inflammation leading to elevated pro-inflammatory cytokines decreasing iron bioavailability

inhibiting the hematopoietic response, chronic illnesses, and anemia of unknown etiology as well as blood loss are also thought to be the primary causes of microcytic anemia in aging population.[12]

The magnitude of the impact caused by anemia, it is necessary to jointly overcome the health department in this case the public health center, the school and adolescent girl to succeed in government programs that reduce anemia in adolescent girl. One of the programs to reduce anemia is by detecting anemia through Hb screening using the sianmethemoglobin method in junior and senior high schools in the Mayong II public health center. Besides, it is known that the causes of anemia include nutrition intake in the morning through breakfast, thus Researchers want to find out whether it has something to do with the breakfast habits of adolescent girl and the incidence of anemia.

II.   METHOD

The research method used is correlation with cross sectional approach. The study was conducted in August - October 2019. The population in this study were all adolescent girl in junior high school, high school / equivalent in the Mayong II Public Health Center, the sample in this study was part of adolescent girl in junior high

school, high school / equivalent in the Mayong II Public Health Centre, amounting to 11 institutions with inclusion criteria that is not menstruating, healthy, entering school when the research takes place and willing to be a respondent. The sample in this study amounted to 227 respondents.

As for sampling with Stratified Random Sampling, so that the average for each study site is 20 respondents. Data collection techniques by conducting Hb laboratory tests using the syanmethemoglogin method and using a questionnaire about breakfast habits of adolescent girls. Analysis in this study using bivariate analysis with lamda test. This analysis is only to see whether there is a relationship between breakfast habits and the incidence of anemia in adolescent girl in the Mayong II Public Health Center.

III.   RESULT

The study was conducted in junior high / high school / equivalent in the area of Mayong II public health centers, which amounted to 227 respondents spread across 11 schools on average each school amounted to 20 respondents who were female.

TABLE I. BIVARIATE ANALYSIS BETWEEN BREAKFAST HABITS AND THE INCIDENCE OF ANEMIA BASED ON THE EXAMINATION OF HEMOGLOBIN IN ADOLESCENT GIRL IN THE MAYONG II PUBLIC HEALTH CENTER

		Anemia Incidence				Total	p
		No Anemia	Mild Anemia	Moderate Anemia	Severe Anemia		
Breakfast habits	Yes	72	53	10	0	92	0,000
	No	46	41	4	1	135	
Total		118	94	14	1	227	

bivariate analysis used lamda test

From the results of the study showed that the majority of respondents who did not have breakfast habits had anemia with 72 respondents and had mild anemia with 53 respondents, while those who did not eat breakfast mostly did not have anemia with 46 respondents and 1 respondent who had severe anemia. After analyzing the test using lamda, the value of p = 0,000 shows that there is a very significant relationship between breakfast habits and the incidence of anemia in adolescent girls in the Mayong II Public Health Center.

IV.   DISCUSSION

Research conducted on 227 respondents showed that 118 respondents 72 had breakfast and did not have anemia, 98 respondents there were 53 respondents who did breakfast but still had mild anemia, and 14 respondents there were 10 respondents who had breakfast and had moderate anemia and there were 1 respondent who did not eat breakfast and experienced severe anemia

Breakfast is very important in forming energy to start activities in the morning. The energy produced can be used to supply the body and brain needs in thinking so as to increase concentration in learning.[13] Breakfast done less than 9 am can meet 15-30% of daily nutritional needs as part of balanced nutrition to live healthy, fit, active and smart.[14] If breakfast is not accustomed to can interfere

with nutritional needs, causing the body's condition to gradually experience malnutrition.

James research states that the contribution of iron deficiency to anemia varies according to a country's infection burden. Anemia-reduction programs for women reproductive age can be improved by considering the underlying infection burden of the population and by assessment the overlap of micronutrient deficiencies and anemia.[6]

Most anemia starts from lack of nutrition in the body, until finally experiencing a deficiency of minerals in the body one of which is iron, this is commonly called iron deficiency anemia. Conversely, if nutritional needs are met adequately or in balance, the body can grow and develop according to normal, so that the body does not experience nutritional deficiencies. Early screening and nutritional assessment are necessary for the effective diagnosis of malnutrition. [15]

The results showed that there was still an incidence of anemia both mild and moderate even though the respondents had breakfast. This is possible because the food consumed for breakfast is not balanced in nutritional value or does not meet the needs of the body so that young women still suffer from anemia and illness can also cause anemia. Menstruation experienced by young women every month can affect the state of anemia.

V. CONCLUSION

The respondents who did breakfast and did not experience anemia were 72 (61%) out of 118 respondents, but there were still cases of anemia among respondents who did breakfast which were mild anemia and moderate anemia. 1 respondent experienced severe anemia due to not having breakfast.

There is a relationship between breakfast with the incidence of anemia with a significant value of 0,000 using the Lamda test.

*S*till high incidence of anemia in adolescent girls, it is necessary to increase the campaign about breakfast by using a balanced menu in addition to carbohydrates need supporting foods that contain animal protein, green vegetables and fruit and take iron tablets once a week when not menstruation and once a day when menstruation.

REFERENCES

[1] N. La Kaimudin, H. Lestari, and J. R. Afa, "Skrining dan Determinan Kejadian Anemia pada Remaja Putri SMA 3 Kendari tahun 2017," vol. 1, no. 4, pp. 1–12, 2016.

[2] L. D. Priyanto, "Hubungan Umur, Tingkat Pendidikan dan Aktifitas Fisik Santriwati Husada dengan Anemia," vol. 6, pp. 139–146, 2018.

[3] WHO, *Prevention of Iron Deficiency Anaemia in Adolescents Role of Weekly Iron*. 2011.

[4] L. Purbadewi, Y. Noor, and S. Ulvie, "Hubungan Tingkat Pengetahuan Tentang Anemia Dengan terhadap terwujudnya sebuah perilaku kesehatan . Apabila ibu hamil mengetahui dan accidental sampling yaitu teknik," vol. 2, no. April, pp. 31–39, 2013.

[5] T. Gebreegziabher and B. J. Stoecker, "Iron deficiency was not the major cause of anemia in rural women of reproductive age in Sidama zone , southern Ethiopia : A cross- sectional study," pp. 1–13, 2017.

[6] J. P. Wirth *et al.*, "Predictors of anemia in women of reproductive age : Biomarkers Reflecting Inflammation and Nutritional Determinants of Anemia (BRINDA) project," vol. 106, pp. 3–5, 2017.

[7] U. Kulsum and R. Halim, "KEBIASAAN SARAPAN PAGI BERHUBUNGAN DENGAN KEJADIAN ANEMIA PADA REMAJA," vol. 18, 2016.

[8] W. Irdiana and T. S. Nindya, "Hubungan Kebiasaan Sarapan dan Asupan Zat Gizi dengan Status Gizi Siswi SMAN 3 Surabaya Correlation between the Habit of Eating Breakfast , Nutrient Intake and Nutritional Status of Female Students in SMAN 3 Surabaya," pp. 227–235, 2017.

[9] I. A. Agdeppa, M. V Capanzana, and J. F. Gonsalves, "Integrated school based nutrition programme improved the knowledge of mother and schoolchildren," vol. 15, no. January, pp. 1–9, 2019.

[10] Kementrian RI, *Profil Kesehatan INDONESIA 2017*. 2017.

[11] J. Fitriany, A. I. Saputri, and I. D. Anemia, "Anemia defisiensi besi," vol. 4, no. 2.

[12] C. Thomson *et al.*, "Nutrient Intake & Anemia Risk in WHO Observational Study," *J Am Diet Assoc*, vol. 111, no. 4, pp. 532–541, 2012.

[13] E. E. Mawarni, "Edukasi Gizi " Pentingnya Sarapan Sehat Bagi Anak Sekolah "," vol. 11, no. 4, pp. 97–107, 2018.

[14] L. J. Utama, A. C. Sembiring, and J. G. L. Sine, "Perilaku Sarapan Pagi Kaitannya Dengan Status Gizi Dan Anemia Pada Anak Sekolah Dasar," *J. Gizi Indones.*, vol. 7, no. 1, p. 63, 2018.

[15] G. G. Poda, C. Hsu, H. Rau, and J. C. Chao, "Impact of socio-demographic factors , lifestyle and health status on nutritional status among the elderly in Taiwan," vol. 13, no. 3, pp. 222–229, 2019.