FACTORS THAT CAUSE ANEMIA IN ADOLESCENT GIRLS

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ABSTRAK : FAKTOR PENYEBAB ANEMIA PADA REMAJA PUTRI

Latar Belakang : Prevalensi anemia di Indonesia masih cukup tinggi. Berdasarkan data Riskesdas 2018, sekitar 23% remaja mengalami anemia yang berarti 3 sampai 4 dari setiap 10 remaja menderita kondisi ini. Sementara itu, prevalensi anemia pada remaja putri di Provinsi Lampung (24,8%) melebihi angka kejadian anemia pada remaja putri di seluruh Indonesia (23,9%). Keadaan ini menunjukkan bahwa anemia masih merupakan masalah kesehatan yang cukup besar dan perlu mendapat perhatian khusus, sehingga ada beberapa faktor penyebab anemia yang perlu dikaji.

Tujuan : Untuk mengetahui faktor penyebab anemia pada remaja putri di SMPN 1 Merbau Mataran, Lampung Selatan tahun 2024. Metode : Desain penelitian survei analitik, dengan pendekatan cross sectional. Menggunakan data primer, penelitian dilakukan pada bulan Februari - Juli 2024 terhadap 145 responden, teknik pengumpulan data menggunakan data primer (kuesioner) dan data sekunder (laporan). Laboratorium Puskesmas Triwulan I). Variabel bebas status gizi, siklus menstruasi, lama menstruasi, dan pengetahuan tentang anemia. Variabel terikat. Anemia pada remaja Putri. Analisis univariat menggunakan uji distribusi frekuensi, analisis bivariat menggunakan uji chi square

Hasil: Ditemukan distribusi frekuensi anemia yang tidak anemia sebesar 60,7%, status gizi normal sebesar 64,1%, siklus menstruasi normal sebesar 79,3%, lama menstruasi normal sebesar 53,2%, dan pengetahuan baik tentang anemia sebesar 69%. Ada hubungan antara status gizi (p-value 0,02; OR value = 2,268), siklus menstruasi (p-value 0,01; OR = 0,314), lama menstruasi (p-value 0,03; OR = 2,082), pengetahuan tentang anemia dengan (p-value 0,03; OR = 0,444). Kesimpulan: Ada hubungan antara status gizi, siklus menstruasi, lama menstruasi, pengetahuan tentang anemia dengan kejadian anemia. Saran: Bagi pihak sekolah untuk membentuk agen perubahan seperti mengangkat remaja putri menjadi pelopor, seperti membentuk kader pemuda di sekolah untuk membantu remaja putri lainnya untuk menambah pengetahuan tentang anemia yang selama ini masih dibantu oleh tenaga kesehatan.

Kata kunci: Anemia, lama menstruasi, pengetahuan remaja, siklus menstruasi, status gizi.

ABSTRACT

Background : The prevalence of anemia in Indonesia is still quite high . Based on Riskesdas 2018 data, around 23% of adolescents experience anemia, which means that 3 to 4 out of every 10 adolescents suffer from this condition While the prevalence of anemia in adolescent girls in Lampung Province (24.8%) exceeds the incidence rate of anemia in adolescent girls throughout Indonesia (23.9%). This situation shows that anemia is still a significant health problems and needs special attention , so there are several factors that causes anemia that need to be researched .

Objective : To find out the factors that causes of anemia in adolescents girls at SMPN 1 Merbau Mataran South Lampung in 2024.

Methods : Design of analytical survey research , with a cross sectional approach . Using primary data, the study was conducted from February to July 2024 on 145 respondents , the data collection technique used primary data (questionnaire) and secondary data (Puskesmas Laboratory report in the first quarters). Independent variables of nutritional status, menstrual cycle , menstruation duration , and knowledge about anemia. Dependent variables . Anemia in adolescents girls ... Univariate analysis using frequency distribution test , bivariate analysis using chi square test

Results : It was found that the frequency distribution of anemia that was not anemia was 60.7%, normal nutritional status was 64.1%, normal menstruation cycle was 79.3%, normal menstruation duration was 53.2%, and good knowledge about anemia was 69%. There was a relationship between nutritional status (p- value 0.02; OR value = 2.268), menstrual cycle (p- value 0.01; OR=0.314), menstrual duration (p- value 0.03; OR=2.082), knowledge of anemia with (p- value 0.03; OR=0.444).

Conclusion : There is a relationship between nutritional status, menstrual cycle , menstruation length , knowledge about anemia and the incidence of anemia.

Suggestion : For schools to form agents of change such as appointing young women to be pioneer such as forming youth cadres in schools to help others young women to increase knowledge about anemia that is still assisted by health workers

Keywords: Anemia, menstrual duration, adolescent knowledge, menstrual cycle, nutritional status .

INTRODUCTION

Anemia is a condition in which hematocrit, hemoglobin and red blood cell levels are lower than normal values as a result of a deficiency of one or more essential food elements (Rahayu *et al.,* 2019) . Anemia is a disease that occurs frequently among young women, because they will menstruate once a month, making the need for iron relatively higher (Ministry of Health of the Republic of Indonesia, 2018) .

Many adolescents suffer from Iron Deficiency Anemia *(* IDA) which affects around 2 billion people worldwide including 300 million children worldwide, and as many as 89% are in developing countries (Youssef *et al.,* 2020) . Adolescent girls (rematri) are susceptible to anemia because they lose a lot of blood during menstruation. Rematri who suffer from anemia are at risk of experiencing anemia during pregnancy. This will have a negative impact on the growth and development of the fetus in the womb and has the potential to cause complications during pregnancy and childbirth, even causing maternal and child death (Ministry of Health of the Republic of Indonesia, 2018) .

Prevalence of anemia according to *the World Health Organization* (WHO) in the world around 40-80% and in developing countries 53.7% are all adolescent girls (Kaimudin *et al.,* 2017) . Based on Riskesdas data in 2018, the prevalence of anemia in adolescent girls in Indonesia is still quite high. As much as 26.8% aged 5-14 years and 32% aged 15-24 years have anemia prevalence in adolescents, meaning that 3-4 out of 10 adolescents in Indonesia suffer from anemia. (Ministry of Health of the Republic of Indonesia, 2019) .

The prevalence of anemia in Indonesia is still quite high. Based on the 2018 Riskesdas data, around 23% of adolescents experience anemia, which means 3 to 4 out of every 10 adolescents suffer from this condition. Meanwhile, the prevalence of anemia in adolescent girls in Lampung Province (24.8%) exceeds the incidence of anemia in adolescent girls throughout Indonesia (23.9%). This situation shows that anemia is still a significant health problem and requires special attention (Ministry of Health of the Republic of Indonesia, 2019).

From previous research, According to Junadi (1995) in Shobah, et al., 2021, there are three factors that contribute to the occurrence of anemia, the first is the direct causal factor consisting of nutritional status due to iron deficiency and disease infection. The second is the indirect causal factor which includes the lack of family attention to women, high activity of women, and food distribution patterns in the family where mothers and daughters are not a priority, and affects the menstrual cycle and duration, and the third is the underlying causal factor which includes economic problems such as low levels of education, low knowledge about anemia, low income, low social status, and difficulty of geographical location (Shobah, et al., 2021).

Based on data from the Profile of the Talang Jawa Inpatient Health Center, Merbau Mataram District, South Lampung Regency in 2022, as many as 21% of children aged over 12-18 years experienced anemia out of 1,635 people, while the indicator for providing iron tablets had reached 93% (Merbau Mataram Inpatient Health Center, 2023a) .

In a preliminary study conducted in the second week of February 2024 at SMPN 1 Merbau Mataram, out of 10 (seven) female adolescents, only 3 (three) female adolescents had knowledge about anemia in the good category, and 3 (three) female adolescents were obese and had a menstrual cycle of more than 35 days with a menstrual period of more than 6 days, while 1 (one) other adolescent experienced mild underweight with a menstrual cycle of less than 21 days with a menstrual period of more than 8 days, but the other 3 (three) female adolescents had normal menstrual cycles and duration . This study aims to determine the factors that cause anemia in female adolescents at SMPN 1 Merbau Mataram, South Lampung in 2024.

RESEARCH METHODS

This type of research is a *quantitative research type* . It was carried out in the month February – July 2024 at SMPN 1 Merbau Mataram South Lampung. The research design used was an analytical survey , with the research approach using a cross -*sectional approach* . Population his is all teenage girls at SMPN 1 Merbau Mataram in the 2024/2025 academic year totaling 197 teenage girls . With sample of 145 teenagers Princess . How to take sample *Proportional simple random sampling* . *The independent* variables in this study were nutritional status, menstrual cycle, duration of menstruation and knowledge of anemia, and the *dependent variable* was the incidence of anemia as a result of the *independent variable* . Data were obtained from questionnaire and results report Laboratory Health center trimester 1. Data analysis using descriptive tests and *chi square tests* . The research has been submitted for ethical approval from the Health Research Ethics Commission of

Malahayati University with the number 4255/EC/KEP-UNMAL/V/2024, dated May 17, 2024.

RESEARCH RESULTS

Based on table 1 above can known results distribution frequency of anemia with category not anemic as many as 88 people (60.7%), nutritional status with normal category as many as 93 people (64.1%), cycle menstruation with normal category as many as 115 people (79.3%), duration of menstruation with normal category as many as 77 people (53.1%), Knowledge with category Good as many as 100 people (69%).

Table 1
Distribution of b usi frequency the incidence of anemia in adolescents daughter (n=145)

Variables	Category	n	%
Anemia	Anemia	57	39.3
	No Anemia	88	60.7
Nutritional status	Not enough	52	35.9
	Normal	93	64.1
Cycle Menstruation	Abnormal	30	20.7
	Normal	115	79.3
Menstrual Duration	Abnormal	68	46.9
	Normal	77	53.1
Knowledge	Not enough	45	31
	Good	100	69

Table 2
Connection nutritional status factors with the incidence of anemia in adolescents daughter

Variables	Category	Anemia Occurrence						p-value	OR; 95%CI
		Anemia		No Anemia		Total			
		n	%	N	%	n	%		
Nutritional status	Not enough	27	51.9	25	48.1	52	100	0.02	2,268 (1,130-4,551)
	Normal	30	32.3	63	67.7	93	100		
Menstrual cycle	Abnormal	6	20	24	80	30	100	0.01	0.314 (0.119-0.825)
	Normal	51	44.3	64	55.7	115	100		
Menstrual period	Abnormal	33	48.5	35	51.5	68	100	0.03	2,082 (1,058-4,099)
	Normal	24	31.2	53	68.8	77	100		
Knowledge about anemia	Not enough	12	26.7	33	73.3	45	100	0.03	0.444 (0.206-0.959)
	Good	45	45	55	55	100	100		

Note: OR: Odds Ratio, CI: Confident Interval

Based on table 2 above it can be seen that results Statistical test there is a relationship between nutritional status , menstrual cycle , duration of menstruation , knowledge about anemia with the incidence of anemia in female adolescents at SMPN 1 Merbau Mataram South Lampung in 2024, with each in a way sequentially *p* - value 0.02 ; OR=2.268 ;, 0.01 ; OR=0.314 ;, 0.03 ; OR=2.082 ;, 0.03 ; OR=0.444 .

DISCUSSION

Distribution of the frequency of anemia in adolescent girls at SMPN 1 Merbau Mataram South Lampung in 2024

Based on the results of the research and analysis, it can be seen that respondents who experienced anemia in female adolescents at SMPN 1 Merbau Mataram, South Lampung in 2024 were included in the non-anemic category as many as 88 people (60.7%).

Anemia in adolescents is usually most common in anemia with iron deficiency. Symptoms and signs of iron deficiency anemia that are not typical are generally fatigue or tiredness due to insufficient oxygen reserves in muscle tissue, so that muscle metabolism is disrupted; dizziness and headaches which are compensation for the brain's lack of oxygen because the hemoglobin carrying capacity is reduced; difficulty breathing, sometimes symptoms of shortness of breath appear, where the body needs more oxygen by compensating for accelerated breathing; palpitations, where the heart beats faster followed by an increase in pulse rate; face, palms, nails, oral mucous membranes and conjunctiva look pale (Tarwono, 2007 in Rahayu et al., 2019) .

Based on research conducted by Chasanah, et al., 2019, that adolescent girls have a higher risk of developing anemia because their need for iron is three times higher, especially because they lose a

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lot of blood during menstruation and factors that cause anemia in adolescent girls such as Low consumption of foods containing iron often occurs, especially among adolescents who often choose food at school without considering nutritional value, only the importance of feeling full, The desire to lose weight often makes adolescents, who are experiencing rapid physical growth, surprised by changes in their body shape, lack of consumption of green vegetables.

According to researchers in this study, adolescents are more dominant in not experiencing anemia because there are still many female adolescents who have normal nutritional status based on body mass index or BMI. Adolescents are in a phase of rapid growth and development, so their nutritional needs are also high. However, adolescents who are healthy and have a balanced diet tend to have sufficient nutritional intake, including iron such as red meat, green leafy vegetables, and fortified grains, tend to have normal hemoglobin levels and do not experience anemia. Adolescents with a good diet and good nutritional status have a lower risk of experiencing anemia.

Frequency distribution of nutritional status in female adolescents at SMPN 1 Merbau Mataram South Lampung in 2024

Based on the results of the research and analysis, it can be seen that the nutritional status variable in female adolescents at SMPN 1 Merbau Mataram, South Lampung in 2024 was included in the normal category as many as 93 people (64.1%).

Based on the results of research conducted by Rahayu, et al., 2019 and Sarihu, et al., 2019 that abnormal nutritional status in adolescents can cause health problems, including anemia, because insufficient nutrients can affect the production of red blood cells and disrupt the body's nutritional balance. Therefore, it is important to control and provide follow-up on abnormal nutritional status in adolescents to prevent more serious health problems. Poor nutritional status such as obesity or being overweight can affect menstrual patterns.

According to researchers, the nutritional status of female adolescents at SMPN 1 Merbau Mataram, South Lampung in 2024 is included in the normal category, because based on data, adolescents who experience anemia with poor nutritional status are only 27 respondents (51.9%) out of 52 respondents, while those who are anemic with normal nutritional status are only 30 respondents (32.3%) out of 93 respondents. Adolescents with normal BMI indicate that they have a balance between calorie intake and energy needs. This balance reflects adequate nutrient intake, including iron which is important for the formation of healthy red blood cells, thereby reducing the risk of anemia. Nutritious food and health care.. A supportive environment, including emotional support and access to health resources, can help adolescents maintain a healthy diet and avoid anemia .

Distribution of menstrual cycle frequency in female adolescents at SMPN 1 Merbau Mataram South Lampung in 2024

Based on the results of the research and analysis, it can be seen that the menstrual cycle variable in female adolescents at SMPN 1 Merbau Mataram, South Lampung in 2024 was included in the normal category for 115 people (79.3%).

Menstrual cycle or menstruation is the distance between the current menstrual cycle and the next menstruation, where the menstrual cycle is not normal, occurring less than 21 days and more than 35 days. During menstruation, there are several symptoms experienced by adolescents which are often called PMS or *premenstrual syndrome* is a collection of physical symptoms, emotions associated with a woman's menstrual cycle. Usually occurs two weeks before menstruation. Around 80-95% of women experience PMS which can interfere with daily activities. The menstrual period that occurs monthly is called the menstrual cycle. (Sarihu, et al., 2019).

According to research conducted by Sriningsih, et al., 2019, Normally, the menstrual cycle lasts for 28 days with a variation of around ± 2 days. However, some women may have a longer menstrual cycle (more than 35 days) or shorter (less than 21 days). A short menstrual cycle (less than 21 days) means that menstruation occurs more often, with a blood volume that may be the same or more than usual, which can increase the risk of anemia.

According to researchers, the menstrual cycle in adolescent girls at SMPN 1 Merbau Mataram, South Lampung in 2024 is included in the normal category, because adolescent girls are more dominant with normal nutritional status, because good nutritional status greatly affects reproductive health. Adolescents with good nutritional status, as measured by a normal BMI (Body Mass Index), have a lower risk of menstrual disorders. Adequate nutritional intake, including essential vitamins and minerals such as iron and folate, supports the function of hormones that regulate the menstrual cycle. Likewise with physical activity, where during adolescence sufficient and regular activity contributes to general health and hormonal balance. Adolescents who are physically active tend to have more regular menstrual cycles than those who are inactive. Exercise helps maintain a healthy weight, which in turn supports a normal menstrual cycle .

Frequency distribution of menstrual duration in female adolescents at SMPN 1 Merbau Mataram South Lampung in 2024 .

Based on the results of the research and analysis, it can be seen that the variable duration of menstruation in female adolescents at SMPN 1 Merbau Mataram, South Lampung in 2024 was

included in the normal category for 77 people (53.1%).

Normal menstruation usually occurs for approximately 7 days (Sarihu, et al., 2020). The duration of menstruation, which normally ranges from 2-5 days, is considered abnormal if: a) The duration of menstruation is more than 6 days, which is called menorrhagia. b) The duration of menstruation is less than 2 days, which is called brachymenorrhea (Rahayu, et al., 2019).

Based on research conducted by Sriningsih, et al., 2019 that the normal duration of menstruation ranges from 3 to 7 days. However, there are some women who experience longer menstruation and more bleeding than usual. This condition can affect the amount of blood that comes out, increasing the risk of anemia due to excessive blood loss (Sriningsih, et al., 2019).

According to researchers the duration of menstruation in female adolescents at SMPN 1 Merbau Mataram Lampung Selatan in 2024 is included in the normal category, because the main influence is the nutritional status which is in the good category, so that it supports balanced hormonal function and normal menstrual duration balanced hormonal function and normal menstrual duration. In addition, there are also sports lessons every week so that this physical activity will help maintain a healthy weight and hormonal balance which contributes to normal menstrual duration.

Frequency distribution of knowledge about anemia in adolescent girls at SMPN 1 Merbau Mataram South Lampung in 2024

Based on the results of the research and analysis, it can be seen that the variable of knowledge about anemia in adolescent girls at SMPN 1 Merbau Mataram, South Lampung in 2024 was included in the good category as many as 100 people (69%).

According to research conducted by Sriningsih, et al., 2019, people with higher education and high knowledge tend to choose better food in quantity and quality compared to those with lower education.

According to Healthy People 2010, Nutrition education will increase children's nutritional knowledge and will help children's attitudes that can influence children's habits in choosing healthy foods and snacks. The influence of nutrition education on health may be more effective if the target is directly at school-age children. (Suarjana. I. M et al. 2022).

According to researchers, knowledge about anemia in adolescent girls at SMPN 1 Merbau Mataram, South Lampung in 2024 is included in the good category because the dominant nutritional status is good with adolescents who are not anemic, this will affect the ability of adolescent girls to receive all the lessons they get from school, because knowledge and health education play an important role in preventing anemia. Adolescents who receive education about the importance of balanced nutrition and iron-rich food sources are more likely to adopt a healthy diet. Health education programs in schools and public health campaigns can increase adolescent awareness of the importance of iron intake.

The relationship between nutritional status factors and the incidence of anemia in female adolescents at SMPN 1 Merbau Mataram South Lampung in 2024

The results of the statistical test obtained a p value of 0.02, so it can be concluded that there is a relationship between nutritional status and the incidence of anemia in adolescent girls at SMPN 1 Merbau Mataram, South Lampung in 2024, with an OR value of 2.268, meaning that adolescent girls who have poor nutritional status have a 2.268 times greater chance of experiencing anemia compared to adolescents with good nutritional status .

Nutritional status is a contributing factor to anemia, this is because nutritional status is a result of iron deficiency and disease infection. Iron deficiency in the body can be caused by a lack of intake of foods containing iron, adequate food intake but with low bioavailability, and consumption of foods containing substances that inhibit iron absorption. Infections such as worms and malaria also generally increase the risk of anemia (Shobah, et al., 2021). Adolescent girls are at higher risk of anemia because their iron needs are three times higher, especially because they lose a lot of blood during menstruation (Chasanag, et al., 2019).

This is in line with research conducted by Astuti, 2023 entitled "Literature Review: Factors Causing Anemia in Adolescent Girls" with research results that there is a relationship between nutritional status and the incidence of anemia. During menstruation, adolescent girls lose about 1.3 mg of iron every day. If not balanced with adequate food intake, this can cause symptoms such as weakness, lethargy, and irritability, every day, everyone loses about 0.6 mg of iron through feces or dirt, so it is important to replace it by consuming foods rich in iron such as vegetables and fruits. Lack of consumption of green vegetables can cause anemia (Astuti, 2023).

A study by McLean et al. (2009) showed that anemia can be caused by non-nutritional factors such as chronic infections, inflammatory diseases, or genetic disorders such as thalassemia, so that someone with poor nutritional status may experience anemia, but may not if the cause of anemia is related to these factors (Gibson, 2024).

The relationship between menstrual cycle factors and the incidence of anemia in female adolescents at SMPN 1 Merbau Mataram, South Lampung in 2024 .

The results of the statistical test obtained a p value of 0.01, so it can be concluded that there is a

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relationship between the menstrual cycle and the incidence of anemia in adolescent girls at SMPN 1 Merbau Mataram, South Lampung in 2024, with an OR value of 0.314, meaning that adolescent girls who have an abnormal menstrual cycle have a 0.314 times greater chance of experiencing anemia compared to adolescents with a normal menstrual cycle .

The menstrual period that occurs monthly is called the menstrual cycle. Normally, the menstrual cycle lasts for 28 days with a variation of around ± 2 days. However, some women may have a longer menstrual cycle (more than 35 days) or shorter (less than 21 days). A short menstrual cycle (less than 21 days) means that menstruation occurs more often, with a blood volume that may be the same or more than usual, which can increase the risk of anemia (Sriningsih, et al., 2019).

This is in line with research conducted by Andiyanto, et al., 2021 conducted in Bojongsaro Village, Purbalingga on adolescent girls regarding factors related to the incidence of anemia, with a descriptive analytical research type, observational research method using a *cross-sectional survey approach,* with the results that the menstrual cycle has a significant relationship with the incidence of anemia in adolescent girls .

According to the researcher, in this study there is a relationship between the menstrual cycle and the incidence of anemia in adolescent girls at SMPN 1 Merbau Mataram, South Lampung in 2024, because adolescent girls are still more influenced by eating patterns and nutritional intake that is less considered, in addition there are bad dietary habits and vegetarian patterns that are not balanced with sufficient sources of plant iron nutrients, so that they can affect the menstrual cycle, in addition to lack of physical activity such as being lazy to exercise, and stress due to problems with studies, family or friendships will have a more irregular menstrual cycle.

The relationship between menstrual duration and the incidence of anemia in female adolescents at SMPN 1 Merbau Mataram, South Lampung in 2024 .

The results of the statistical test obtained a p value of 0.03, so it can be concluded that there is a relationship between the duration of menstruation and the incidence of anemia in adolescent girls at SMPN 1 Merbau Mataram, South Lampung in 2024, with an OR value of 2.082, meaning that adolescent girls who have abnormal menstrual duration have a 2.082 times greater chance of experiencing anemia compared to adolescents with normal menstrual duration.

Menstrual patterns can be assessed based on the amount of blood loss, frequency of bleeding, and duration of menstruation. Quantitatively measuring the amount of menstrual blood is very difficult to do, even for women themselves, making it difficult to determine whether their menstrual flow is normal. However, bleeding is considered abnormal if it lasts more than six days and requires the use of more than 12 pads per period. In adolescent girls with more frequent and prolonged menstrual patterns, above-average iron loss can occur (Rahayu, et al., 2019).

In line with the research conducted by Astuti, 2023 with the title "Literature Review: Factors Causing Anemia in Adolescent Girls" with the results of the study that there is a relationship between the factors that influence the incidence of anemia, namely menstruation.

According to researchers, there is a relationship between the length of menstruation and the incidence of anemia in adolescent girls at SMPN 1 Merbau Mataram, South Lampung in 2024 because there are still adolescent girls who say that the menstrual blood that comes out is more and lasts longer, do not consume iron tablets during menstruation, so there needs to be a control card for adolescent girls in consuming iron tablets during menstruation.

The relationship between knowledge factors about anemia and the incidence of anemia in adolescent girls at SMPN 1 Merbau Mataram South Lampung in 2024

The results of the statistical test obtained a p value of 0.03, so it can be concluded that there is a relationship between knowledge about anemia and the incidence of anemia in adolescent girls at SMPN 1 Merbau Mataram, South Lampung in 2024, with an OR value of 0.444, meaning that adolescent girls who have less knowledge about anemia are 0.444 times more likely to experience anemia compared to adolescent girls with good knowledge about anemia .

Food consumption patterns are greatly influenced by local customs, including knowledge about food, attitudes toward food, and eating habits. The level of education and knowledge will affect food consumption through the way food ingredients are selected. A person with higher education with high knowledge tends to choose better food in quantity and quality compared to those with lower education.

Health and nutrition education programs for school children are one way to implement global health interventions simply and effectively to obtain broader education. According to Healthy People 2010, Nutrition education will increase children's nutritional knowledge and will help children's attitudes that can influence children's habits in choosing healthy foods and snacks. The influence of nutrition education on health may be more effective if the target is directly at school-age children. (Suarjana. I. M et al. 2022). Knowledge is a basic causal factor that contributes to the occurrence of anemia (Shobah, et al., 2021).

According to researchers, there is a relationship between knowledge about anemia and the incidence of anemia in adolescent girls at SMPN 1 Merbau Mataram, South Lampung in 2024 because there are still adolescent girls who experience poor nutritional status, abnormal menstrual cycles and abnormal menstrual duration, this can result in a low level of knowledge about anemia, such as consuming iron tablets during menstruation, although some know but do not practice it, meaning that the level of awareness in preventing anemia is still low.

CONCLUSION

Distribution of frequency of anemia with the category of not anemia as many as 88 people (60.7%) , nutritional status with a normal category of 93 people (64.1%) , menstrual cycle with a normal category of 115 people (79.3%) , the duration of menstruation with the normal category as many as 77 people (53.1%) , Knowledge with a good category of 100 people (69%) .

There is a relationship between nutritional status , menstrual cycle , duration of menstruation , knowledge about anemia with the incidence of anemia in adolescent girls at SMPN 1 Merbau Mataram, South Lampung in 2024, with each in a way sequentially *p*- value 0.02 ; OR=2.268 ;, 0.01 ; OR=0.314 ;, 0.03 ; OR=2.082 ;, 0.03 ; OR=0.444 .

SUGGESTION

Forming agents of change, such as appointing young women to become pioneers, such as forming youth cadres in schools that are formed in integrated health service post adolescents in helping other adolescent girls to increase their knowledge about anemia which is still assisted by health workers .

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