Relationship Between Menstruation Duration and Nutritional Status to the Incidence of Anemia in Adolescent Women in 2021

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Abstract:- This study aims to determine wheter there is a relationship between nutritional status and duration of menstruation on the incidence of anemia at State Senior High School 6 Merangin, Nalo Tantan District, Merangin Regency, Jambi Province in 2021. Indepdent variabel (Mentrual duration and nutritional status) and dependent variables (anemia ini adolescent girls) were taken or collected at the same time (Notoatmodjo, 2012). The sample in this study were some of the young women in State Senior High School 6 Merangin Regency, totaling 62 respondents. The sampling technique used is Systematic Random Sampling. Samples were selected based on intervals. Test Analysis using the Spearman correlation test. Based on the table above, the results of statistically significant relationship (p>0,05) between nutritional status and the incidence of anemia. The pvalue based on the above results is 655, which means that there is no correlation between nutritional status and HB levels. There is a relationship between the length of menstruation with the incidence of anemia in adolescent girls. Judging from the results, the p-value is 0,023, which means that the length of menstruation and anemia is correlated. This means that there is no relationship between nutritional status and the incidence of anemia and there is a relationship between the length of menstruation and the incidence of anemia.

Keywords:- Nutritional Status, Duration of Menstruation, Correlation.

I. INTRODUCTION

Based on data from the World Health Organization (WHO), the prevalence of anemia in adolescents in the world varies in several developing countries ranging from 20 -70%, high anemia occurs in the most populous country in the world, namely India with 78.75% with most cases in young women (WHO, 2013). According to Basic Health Research (Rikerdas), the prevalence of anemia in women in Indonesia is 44.8%, for the prevalence of anemia in women aged 5-14 years is 26.4%, while those aged 15-25 years are 18.4% (Riskesdas, 2016).

Based on the report on the adolescent reproductive health program at the Jambi City Health Office (2011), the incidence of anemia in female adolescents has fluctuated over the last three years. In 2009 the incidence of anemia in young women (10-18 years) in the work area of the Jambi City Health Service was 10.9%. Based on the data collection on Indonesian families in 2021, there are 7,740 young women aged 16-18 years old in Merangin Regency total of 5,847 educated people. Based on population data from the Family Planning Extension Center, Nalo Tantan District, the number of young women is 885. Sungai Ulak Village ranks 1st with the highest number of young women, namely 408 people. The highest incidence of anemia among young women was in the working area of the Aur Beduri Public Health Center in 2018, amounting to 8% of the total number of young women at the Aur Beduri Health Center. One of the working areas of the Aur Beduri Health Center noted that most young women were at State Senior High School 6 Merangin environment, totaling 502 people. Class X young women totaled 176 students. Class XI young women totaled 167 students. Class XII young women totaled 159 students.

Adolescents are very susceptible to anemia because adolescence is in the age range of 12-18 years. This period is the initial phase when nutritional needs will be divided by gender. Adolescent girls and boys have a slightly different portion of nutritional intake. This is due to biological and physiological changes, so that the fulfillment of nutritional needs is also different. In particular, young women as future mothers have a vulnerability in nutritional problems. In addition, anemia experienced by young women in particular will have a more serious impact, considering that they are prospective mothers who will become pregnant and give birth to a baby, thus increasing the risk of maternal mortality, premature birth and low birth weight babies (LBW).

The relationship between the length of menstruation and nutritional status in health is relevant to the theory of Djaeni (2012) which states that excessive physical activity can affect the length of menstruation because being underweight can cause the duration of menstruation to be abnormal. Based on the study, 43.8% of research respondents are underweight had menstrual periods >6 days. This is because adolescents with low body weight (underweight) affect the body's fat cells to produce the hormone estrogen. This is relevant to the theory of Djaeni (2012) which says that an imbalance in the hormone estrogen causes menstruation to be abnormal. Therefore, based on the above background, researchers will examine whether there is a true relationship between the length of menstruation and nutritional status on the incidence of anemia at State Senior High School 6 Merangin.

II. METHODES

A. Study Population

According to Nursalam (2013) the population in the study are subjects (eg humans: clients) who meet predetermined criteria. The school stipulates that only class XII be examined. So, the population in this study were all class XII girls at SMA N 6 Merangin Regency, totaling 159 people with an age range of 16-19 years old.

B. Inclusion Criteria
- Already Menstruation
- Not menstruating
- No history of malaria and worms
- Willing to be a respondent

C. Exclusion Criteria

Classes that are not recommended or not allowed to be respondents by the school with consideration.

D. Teknik Pengambilan Sampel

The sampling technique uses Systematic Random Sampling. Samples are selected based on intervals.

$$Interval = \frac{159}{62} = 2,5$$

Based on the calculation above, after all the populations are obtained, then the samples are sorted through the list of populations that have serial numbers multiples of 2 until the number of samples is fulfilled.

E. Teknik Analisis Data

Data Analysis Univariate analysis was data analysis that was carried out to determine the frequency distribution of each variable, from the independent variable (menstrual length and nutritional status) and the dependent variable (anemia in young women).

Bivariate analysis is an analysis that aims to see the relationship between two variables, namely: the dependent variable, namely the incidence of anemia in young women with the independent variable length of menstruation and nutritional status with the Analysis Test using the Spearman correlation test because the data is not normally distributed. The significance test was carried out by comparing the significance value obtained with α, if p value $< \alpha$ there is a significant relationship. This test has $\alpha = 0.05$.

III. RESULTS

Merangin Regency is one of the regencies in Jambi province, Indonesia. This district is the largest district in Jambi province, with an area of 7,668.61 km² which is divided into 24 districts and a population of 357,315 people. The district capital of Merangin is in Bangko district.

Based on the database that Merangin district has, the number of high schools in Kab. Merangin is 23 schools. These schools are spread over 24 districts/cities. One of the high schools is State Senior High School 6 Merangin.

State Senior High School 6 Merangin is located at Jl. Lintas Tengah Sumatera No.Km 4, Sungai Ulak, Nalo Tantan, Merangin Regency, Jambi 37313. The Senior High School has 502 female students. Class X young women totaled 176 students. Class XI young women totaled 167 students. Class XII young women totaled 159 students.

Table 1. Frequency Distribution of the Nutritional Status of Young Girls at Senior High School 6 Merangin 2021

cathegory	BMI	f	%
Underweight	0-18,5	7	11,3%
Normal	18,5-25	49	79%
Over weight	>25	6	9,7%
		62	100%

Based on the data above, the frequency of nutritional status of SMAN 6 Merangin students is thin with BMI 0-18.5 there are 7 respondents (11.3%), normal with BMI 18.5-25 there are 49 respondents (79%), and over weight with BMI > 25 there are 6 respondents (9.7%).

Nutritional status is a condition that is shown as a consequence of the balance between nutrients that enter the body and are needed by the body. (Harjatmo, 2018). a. Nutritional status is a condition that is shown as a consequence of the balance between nutrients that enter the body and are needed by the body. In conditions where the intake is equal to the nutritional needs (balanced), the body's condition is in a good nutritional state, whereas in conditions where the intake of nutrients is less than the body's nutritional needs, it will result in a malnutrition body. In conditions where the intake of nutrients is more than the need for nutrients, it will result in the body being in a state of excess nutrition. (Harjatmo, 2018).

Table 2. Distribution of the Frequency of Long Periods of Menstruation for Young Girls at Senior High School 6 Merangin in 2021

Long Period	Long Periods	f	%
Short	0-3 days	4	6,5%
Normal	3-8 days	45	72,6%
Long	>8 days	13	21%
Total		**62**	**100%**

Based on the data above, it was found that the frequency of menstrual periods for young women at Senior High School 6 Merangin 2021, namely young women with short menstrual periods of 0-3 days were 4 respondents (6.5%), normal menstrual periods 3-8 days there were 45 respondents (72.6%)) and long menstrual periods > 8 days there were 13 respondents (21%).

Adolescent girls are a transition from adolescents to adults, marked by physical and mental changes. Physical changes are marked by the functioning of the reproductive organs such as menstruation (age 10-19 years), (Ministry of Health 2008). Menstruation is a biological process associated with achieving sexual maturity, fertility, normality, body health, and even the renewal of the body itself (Abdullah, 2009).

From the results of the research, 42 respondents had menstruated with normal menstrual periods. This will have an impact on menstrual disorders but will improve if the nutritional intake is good. Inadequate nutritional intake can affect menstrual irregularities in most young women (Kabdul & Dian, 2012).

Table 3. Frequency Distribution of Anemia Of Young Girls at Senior High School 6 Merangin 2021

Hemoglobin Level	f	%
< 12	25	40,3%
>12	37	59,7%
Total	**62**	**100%**

Based on the data above, the frequency of anemia among young women at Senior High School 6 Merangin 2021 was 25 respondents (40.3%) with anemia and 37 respondents (59.7%) girls who were not anemic. Anemia is a condition where the number of red blood cells or hemoglobin is less than normal. The normal level of hemoglobin in female adolescents is > 12 gr/dl. One of the other causes of anemia experienced by young women is iron loss, this can occur due to menstruation and bleeding.

Low Hb can be caused by a lack of intake of certain vitamins and minerals in the body. One of the nutrients that play an important role in producing Hb and red blood cells is iron. This condition is called iron deficiency anemia and is the most common type of anemia. When the body lacks hemoglobin, anemia will occur which can cause several complaints and health problems. Hemoglobin (Hb) is an iron-rich protein in red blood cells that carries oxygen throughout the body. This protein also functions to give blood red color.

Table 4. The Relationship Between Nutritional Status And The Incidence Of Anemia In Female Adolescents At Senior High School 6 Merangin

Nutritional Status	Hemoglobin Levels		n	p-Value	ρ
	Anemia (<12)	Normal (≥12)			
Under weight	3	4	7	0.581	0.072
Normal	17	28	45		
Over weight	3	7	10		

Based on the table above, the results of statistical tests using Pearson's correlation obtained greater Ho results. This figure shows that statistically there is no significant relationship (p > 0.05) between nutritional status and the incidence of anemia. The p value based on the results above is 0.581 which means there is no correlation between nutritional status and HB levels.

The results of this study are in line with research conducted by Andiyati (2016). In this study, it was found that most of the respondents had normal nutritional status but many had anemia. This may be because young women consume less animal protein and iron. Physical Research (2009), states that the level of consumption of protein and iron has a relationship to anemia status in young women and

if the amount of protein in the body is deficient in food the ability to transport iron into red blood cells is reduced, resulting in impaired absorption and transport of iron which will cause anemia. Meanwhile, iron affects the formation of blood hemoglobin.

These results are in line with research conducted by Hidayati, 2019 which found that 15% of young women had anemia, 48.3% abnormal body mass index and 46.7% abnormal menstrual cycles. There is no effect of anemia and body mass index on female adolescent menstruation. Strengthened by the results of Endarwati's research, 2018 that there is a relationship between knowledge about anemia and the incidence of anemia (p = 0.002). There is no relationship between BMI and the incidence of anemia (p=0.831). There is a relationship between the level of protein adequacy (p=0.000) and the incidence of anemia. There is a relationship between the level of iron adequacy and the incidence of anemia (p=0.000). There is a relationship between zinc adequacy level and anemia (p=0.001). There is no relationship between BMI and the incidence of anemia, because BMI is not only influenced by Hb levels or the incidence of anemia. But it is also affected by other factors such as infection, hepatomegaly, low intake of nutrients which can inhibit growth, causing body weight to be less than the ideal body weight (203). As well as young women who experience menstruation, lifestyle changes, high activity, which can cause BMI to be less or not normal.

The results of this study did not significantly influence BMI due to various other factors that influenced one including them the health status of adolescents, menstrual cycles and duration, rest patterns and unbalanced food consumption, and the environment. Biddulph's research (2000) in Siska Nur's study states that there is a synergistic interaction between malnutrition and infection. Infection against growth such as decreased body weight decreased immunity and mucosal damage. This situation is caused by loss of nutrient supply as a result of metabolic response through the digestive tract. At the same time, there is a decrease in appetite which in turn will cause the input of nutrients and energy that is less than their needs.

Adolescents who experience chronic energy deficiency will have an impact on immune cell mediation and antibody production thereby increasing the chances of infectious diseases, due to a decrease in the number of lymphocytes, a decrease in the activity of Natural Killer cells (NK cells), and a decrease in lymphocyte stimulation. Factors that affect the nutritional status of adolescents are aspects of food selection because adolescents have stepped on the stage of independence. Teenagers usually choose whatever food they like, they don't even have an appetite anymore to eat with their families at home. Many activities outside the home make teenagers often influenced by their peers. Selection of food is no longer based on nutritional content, but just on socializing for fun. A pleasant family atmosphere influences eating habits. The eating patterns of young women from happy families tend to be better than those from disharmonious families. 204 However, this is not in line with research conducted by Abidin 2012, which stated that there is

a relationship between BMI and Anemia, which was strengthened by research by Bhargava et al. (2001) in Bangladesh which showed that there was a relationship between BMI and iron status in the body. Likewise, research by Arifeen *et al*., (2000) in Tanzania showed that there were significant differences in anemia with BMI <19 kg/m2 and BMI > 24 kg/m2, where women who had BMI <19 kg/m2 had a higher risk of suffering from anemia 3 times greater than women with BMI > 24kg/m2. Examination of hemoglobin levels affects eating patterns which are sometimes irregular in a day and also does a diet program.

This is supported by Susanti's research (2016) that most of the samples had complete meals only twice a day (63%). This is based on the theory that diet is a person's habitual pattern at every meal in one day. Reducing food portions, the desire to have a body shape like a mannequin and stars so they don't want to eat a lot, this can cause a lack of iron intake in the body. This is what can trigger anemia in young women due to irregular eating and intake in a day that does not meet the needs of balanced nutrition, besides that there are those who do diet programs by limiting the portion of food in a day and sometimes prefer to eat ready-to-eat food. Anemia often occurs in adolescents, adolescents tend to maintain their appearance by avoiding excessive weight gain. Body conditions that are not in line with expectations make teenagers go on a diet. As a result, nutritional intake is not met and susceptible to anemia. In addition, young women who have entered puberty will experience menstruation every month which causes anemia easily. 205 This study showed that there was no relationship between BMI and the incidence of anemia, on the basis of the research conducted on adolescents whose physical activity was very high, and the needs and activities of each adolescent were different. The diet and nutrition that is prepared to fulfill different nutrients for each family. This makes a difference between young women in receiving nutritional intake which affects the weight and height of each teenager, so that to determine the incidence of anemia from BMI it does not have a significant effect.

Table 5. The relationship between the duration of menstruation and the incidence of anemia in young women at Senior High School 6 Merangin

Long Periods	Kadar Hemoglobin		n	p-Value	ρ
	Anemia (<12)	Normal (≥12)			
Short	2	2	4		
Normal	11	33	44	0.019	-0.298
Long	10	4	14		

Based on the table above, there is a relationship between the length of menstruation and the incidence of anemia in female adolescents. Judging from the results, the p value is .023, which means that the length of menstruation and anemia are correlated. Statistical test results using Spearman's correlation, obtained a p value of 0.019 (p value <0.05), then Ho was rejected, so there is a relationship between the length of menstruation and the incidence of anemia in young women and has a correlation coefficient value of -.298, which means

that the longer the teenage menstruation daughter will lower the hemoglobin level or increase the incidence of anemia. This is in line with research conducted by Prastika (2011) in Surakarta.

Anemia in young women is caused by blood loss with menstruation, it can be affected by the cycle, length and number of menstruation. The menstrual cycle is the distance between the start of the previous menstruation and the next menstruation (Maryana, 2012).

Blood loss during menstruation is about 30 ml which is equal to the need for an additional 0.5 mg of iron / day. This daily blood loss is calculated from the amount of iron lost during menstruation over a period of one month. A young woman will lose 80 ml of blood which is equivalent to 1 mg of iron/day. Young women who are unable to maintain a positive iron balance will lose as much as 30 ml of iron during menstruation (Maryana, 2012). Penelitian Asghar (2011), kehilangan darah yang lama merupakan faktor yang penting yang menyebabkan anemia. Remaja putri dengan lama menstruasi panjang akan memiliki risiko yang lebih tinggi untuk mengalami anemia karena riwayat kehilangan darah yang lebih lama.

Apart from being influenced by the length of menstruation, there is much menstruation. The amount of blood loss experienced each menstruation. The weakness of this study is that it does not examine the amount of menstruation due to the difficulty of measuring the amount of blood that comes out.

IV. CONCLUSION

Based on research that has been done, nutritional status is not related to hemoglobin levels in adolescents, but the duration of menstruation is correlated with decreased hemoglobin levels with a p value of 0.023. the longer the menstrual period for young women, the lower the hemoglobin level or increase the incidence of anemia (Spearmen rho -0.289).

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