

The Relationship Between Menstrual Duration And Anemia Incidence In Adolescent Females at State Senior High School 7 Pekanbaru

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ABSTRACT

Anemia is a health problem characterized by a decrease in hemoglobin levels below normal limits. In women, the normal hemoglobin level is 12–15 grams per deciliter. Several factors contribute to anemia in adolescent girls, including the menstrual cycle. According to the World Health Organization (WHO, 2023), the prevalence of anemia in adolescent girls is 30%. Anemia in adolescent girls can also have an impact on themselves, such as disrupting growth and development. This study aims to determine the relationship between menstrual duration and the incidence of anemia in female students at SMA Negeri 7 Pekanbaru. The research design used in this study is a quantitative study with an analytical observational design using a cross-sectional approach. The research was conducted at SMA Negeri 7 Pekanbaru on June 5, 2025. The instrument used in this study was a questionnaire and a hemoglobin measuring tool. The population in this study consisted of all 11th-grade female students at SMA Negeri 7 Pekanbaru, totaling 174 students. The sampling technique used was purposive sampling followed by systematic random sampling, with a total of 119 respondents. The data were analyzed using univariate and bivariate analysis with the chi-square test. The chi-square test results in this study showed a pvalue of 0.000 ($p < 0.005$), indicating that there is a significant relationship between menstrual duration and the incidence of anemia in adolescent girls. There is a relationship between menstrual duration and the incidence of anemia among female students at SMA Negeri 7 Pekanbaru. It is hoped that schools and healthcare personnel can collaborate in monitoring anemia rates to prevent anemia-related issues among adolescent girls.

Keywords: Adolescents, Menstrual Duration, Anemia.

INTRODUCTION

Adolescence is a crucial period in human development. It is a transitional period from childhood to adulthood, occurring between the ages of 10 and 19. Adolescence, or puberty, is a crucial time for the maturation of physical (sexual) organs, hormonal

changes, psychological changes, and social changes. One sign of puberty in adolescent girls is menstruation (Kusnaningsih, 2020). Menstruation is bleeding caused by the shedding of the endometrium, which occurs periodically (Purwati, Y., & Muslikhah, 2020). A normal menstrual cycle lasts 21 to 35 days, characterized by a daily flow of 10 to 80 ml of blood. The menstrual cycle is the interval between the start of the last menstrual period and the start of the next. An abnormal menstrual cycle occurs between less than 21 days and more than 35 days. Menstrual bleeding lasts longer or heavier than usual (more than 8 days) and requires changing sanitary pads 5-6 times, or approximately 20-80 ml per day. The menstrual cycle is considered abnormal or experiencing menstrual disorders if the cycle, duration, or blood volume is less or more than the range mentioned above (Kartini, 2024).

Data from WHO (2023) shows that the prevalence of menstrual cycle length disorders in adolescent girls reaches around 45%. According to research by Omani Samani, R., (2018) The prevalence in Indonesia of hypermenorrhea is 12.94%, the estimated overall prevalence of hypomenorrhea is 5.25%, the combined prevalence of dysmenorrhea is 73.27%, the prevalence of amenorrhea is 18.4%, polymenorrhea 10.5%, oligomenorrhea 16.7%. In adolescents who experience menstruation, the amount of blood lost each month can be significant. In addition, blood loss during menstruation not only reduces blood volume in the body, but also loses iron which is important for the formation of hemoglobin in red blood cells. The incidence of menstrual length in Riau in 2018 occurred 95.7% in the age range of 14-16 years of adolescent girls (Capellini, M, -D., & Beris, 2015) Disorders in menstrual length that are longer than normal, then the blood that comes out will be more. More iron is lost in the blood. This results in low hemoglobin levels. If hemoglobin levels fall below normal, anemia occurs (Ansari, 2020). One factor contributing to anemia is an irregular menstrual cycle. Excessive blood loss during menstruation is thought to cause anemia (Lilieki Pratiwi, 2024).

Anemia is a health problem characterized by a decrease in hemoglobin levels from normal limits (Kristianti, YD, & Metere, 2021). In adolescent women, normal Hb levels are 12-15 grams per second. Anemia also increases the risk of infection and death, impairs cognitive abilities and also causes poor growth and development (Ministry of Health, 2022). According to WHO, (2023) the prevalence of anemia in adolescent girls is 30%, the prevalence in Indonesia is 18% (Ministry of Health, 2023) in Riau Province, the

prevalence of anemia is 25.1% in the 15-24 year age range. Anemia is one of the causes of death in Riau Province where the incidence rate is 28% (Riau Province Health Profile, 2021).

Some factors that cause anemia in adolescent girls include the menstrual cycle. The longer the menstrual cycle, the more blood is produced and the body loses iron stores, leading to anemia. Research by Warda, Y., & Fayasari (2021) showed that adolescents with irregular menstrual cycles were 2,537 times more likely to develop anemia than those with normal menstrual cycles (Warda, Y., & Fayasari, 2021).

One impact of menstrual irregularities is fertility problems. Long menstrual cycles result in fewer eggs being produced, which makes it difficult for women to achieve their fertile period. This menstrual irregularity can be an important indicator of reproductive system disorders, including uterine cancer and infertility (Utami, 2020).

The impact of anemia may not be immediately apparent, but it can be long-lasting and can impact the adolescent's later life. Anemia in adolescent girls can also have negative consequences, such as impaired growth and development, increased susceptibility to poisoning, and impaired cognitive function. In addition to the long-term effects, anemia can also cause lethargy, fatigue, weakness, tiredness, and inattention. One trigger for anemia is an irregular menstrual cycle.

Excessive blood loss during menstruation is thought to cause anemia (Liliek Pratiwi, 2024). One solution to address anemia is to provide iron supplements to adolescent girls. It is hoped that providing iron supplements can help prevent anemia. In addition to providing iron supplements to adolescent girls, we can also educate them to ensure their intake and maintain a healthy and clean lifestyle, such as avoiding long nails and wearing shoes. This is to prevent hookworms from absorbing blood from the digestive tract, as this can cause excessive anemia in adolescent girls. Based on a preliminary survey conducted by researchers at Pekanbaru State Senior High School 7, 37 out of 511 female students experienced longer-than-usual periods, potentially increasing the risk of anemia.

METHOD

This study used an analytical observational method to determine the relationship between menstrual duration and the incidence of anemia in adolescent girls at SMA Negeri 7 Pekanbaru. The sampling technique used was systematic random sampling. The

sample in this study were preschool children who met the inclusion criteria, with a total of 119 respondents. Data analysis used univariate and bivariate methods. Data collection was carried out through a preliminary survey and questionnaire distribution.

Table 4.1 Frequency Distribution of Respondents by Age, Menstrual Duration, and Anemia

No	Characteristics		Frequency	Percentage (%)	Based
1.	Age	16 years	44	37.0	on the results in Table 4.1, the
		17 years	62	52.1	
		18 years	12	10.1	
		19 years old	1	8	
Total		119	100%		
2.	Abnormal	50	42.0		
Long Menstruation					
	Normal	69	58.0		
Total		119	100%		
3.	Anemia	Anemia	55	46.2	
		No Anemia	64	53.8	
Total		100%	100%		

majority were 17 years old (62 respondents) and 1 respondent (8%) were aged 19 years. Sixty-nine respondents (58.0%) had normal menstruation, 50 respondents (42.0%) had irregular menstruation, 55 respondents (46.2%) had anemia, and 64 respondents (53.8%) were not anemic.

Bivariate Analysis

The analysis conducted to examine the relationship between menstrual duration and the incidence of anemia in adolescent girls used the Chi-square test to determine whether there was a significant relationship between menstrual duration and anemia. The results of the analysis regarding the relationship between menstrual duration and the incidence of anemia in adolescent girls are shown in the table below:

Table 4.2 Relationship between menstrual duration and the incidence of anemia

Variables	<u>Menstrual duration with</u> <u>anemia</u>				Total		P Value
	Anemia		No Anemia				
Menstrual							
Period	N	%	N	%	N	%	
Abnormal	42	76.4	8	12.5	50	100%	0.000
Normal	13	18.8	56	81.2	69	100%	
Total	55		64		119		

Based on the results of a bivariate analysis of 119 respondents who experienced irregular menstruation, the majority of respondents were anemic (42 respondents (76.4%), while a minority of respondents were not anemic (8 respondents (12.5%). Furthermore, the majority of respondents with normal menstruation were not anemic (56 respondents (81.2%), while a minority of respondents were anemic (13 respondents (18.8%).

The Chi-square test results in this study showed a p-value of 0.000 ($p < 0.005$), thus concluding that there is a relationship between menstrual duration and the incidence of anemia in adolescent girls at Pekanbaru State Senior High School 7.

DISCUSSION

Based on the results of the univariate analysis, the majority were 17 years old (62 respondents) and 1 respondent (8%) were 19 years old. Based on the results of the bivariate analysis, of the 119 respondents who experienced irregular menstruation, the majority were anemic (42 respondents) and a minority of non-anemic respondents (8 respondents). Furthermore, the majority of respondents with normal menstruation (56 respondents) were not anemic.

A minority of respondents were anemic (13 respondents) and 18.8%. The Chi-square test in this study showed a p-value of 0.000 ($p < 0.005$), thus concluding that there is a relationship between menstrual duration and the incidence of anemia in adolescent girls. The results of this study are in line with the research conducted by Julianti, et al., (2024) with the title The Relationship between Menstrual Patterns and the Incidence of Anemia in Adolescent Girls at SMPN 1 Tanjung, Brebes Regency. It was found in this study that there was a significant relationship ($p > 0.05$) namely p value 0.110 between

menstrual patterns and the incidence of anemia in adolescent girls at SMPN 1 Tanjung, Brebes Regency with a correlation coefficient strength (r) (0.204) which means a low correlation and shows a positive correlation direction.

Based on research conducted by (Eka Vicky Yulivantina, 2021) entitled "The Relationship Between Menstrual Duration and Anemia in Adolescent Girls at Muhammadiyah 7 High School, Yogyakarta," it shows a relationship between menstrual duration and anemia with α value of 0.02 and p value of 0.002. Generally, adolescents experience menstruation between the ages of 12 and 15. This is a physiological process that indicates the maturity of the reproductive system. Menstruation is the process of releasing blood from the uterus caused by the shedding of the uterine lining, which is rich in blood vessels, and the release of unfertilized eggs. The menstrual cycle generally lasts 21-35 days, during which time 10-80 milliliters of blood are released each day. A menstrual cycle >35 days or menstruation lasting more than 8 days is considered abnormal. This can occur due to various factors including hormonal imbalance, stress, contraceptive use, and menstrual patterns (Helmyati, s., Puspa, s., & Putri, 2023). According to the researcher's assumption, respondents who experience abnormal menstrual periods with long cycles will tend to experience anemia because basically women will experience menstruation every month by releasing 50-80 cc of blood every month and losing 30-40 mg of iron, this is what causes women with abnormal menstrual periods with long cycles to tend to experience anemia compared to women who experience normal menstrual periods.

Factors that can contribute to anemia include menstrual patterns, infectious diseases, rest, lack of knowledge about anemia, and parents' economic status. The normal menstrual cycle for adolescent girls is 1-7 days (86.4%). Furthermore, a lack of iron in the diet also plays a significant role in increasing hemoglobin levels. Another impact of anemia in adolescent girls is predominantly a decline in academic achievement and enthusiasm for learning. Lack of nutritional status (Fe) can lead to symptoms such as paleness, lethargy/fatigue, decreased appetite, and impaired growth (Christina, M., 2021).

This aligns with the theory put forward by Arisman (2021) in the journal "The Relationship between Menstrual Patterns and the Incidence of Anemia in Adolescent Girls" (2020), which states that adolescent girls who have started menstruating are at risk of iron deficiency anemia. The amount of blood lost during one menstrual period ranges

from 20-25 cc. This implies an iron loss of 12.5-15 mg/month, or approximately 0.4-0.5 mg/day. When this amount is added to basal iron losses, the total iron loss is 1.25 mg/day.

Anemia can be prevented by eating foods rich in iron, consuming foods that promote iron absorption, such as those rich in vitamin C (tomatoes, broccoli, oranges, strawberries), and meat, fish, and poultry. Anemia can be treated with iron tablets and blood transfusions for severe anemia with hemoglobin levels <8 g/dL (Indriana, N., & Damayanti, 2022).

Non-pharmacological treatments for anemia include beetroot, Ambon bananas, Mas bananas, spinach juice, and boiled long beans and carrots. Long beans and carrots contain iron, which can help increase hemoglobin levels. Carrots also contain iron and vitamin C, which aids in iron absorption (Safitri et al., 2021).

Apples contain several types of vitamins, including vitamin A, vitamin B1, vitamin B2, vitamin B3, vitamin B5, vitamin B6, vitamin B9, and vitamin C. Apples also contain calcium, magnesium, iron, and other elements such as phytochemicals, fiber, tannins, flavonoids, and flavonoids. Beets are often juiced and eaten or processed into soft-textured foods (Nutrition, Public Health Sciences, 2022).

CONCLUSION

Based on the results of a study on the Relationship between Menstrual Duration and the Incidence of Anemia in Adolescent Girls at State Senior High School 7 Pekanbaru in 2025 and data processing, the following conclusions can be drawn:

1. There is a relationship between menstrual duration and the incidence of anemia in adolescent girls at State Senior High School 7 Pekanbaru. The results of this study were obtained from 119 respondents, with the majority of those experiencing irregular menstruation (42 respondents (76.4%)), and a minority of those without anemia (8 respondents (12.5%)). Furthermore, the majority of respondents with normal menstruation (56 respondents (81.2%)), did not have anemia, and a minority of those with anemia (13 respondents (18.8%)).
2. The Chi-square test results in this study showed a p-value of 0.000 ($p < 0.005$), thus concluding that there is a relationship between menstrual duration and the incidence of anemia in adolescent girls.

LIMITATIONS

The limitations of this study include:

1. This study used a cross-sectional design, which can only demonstrate an association without explaining the causal relationship between menstrual history and anemia.
2. A limitation of this study is that, in assessing the duration of menstruation, the researchers only collected data on the number of days the respondents menstruated but did not assess the amount of blood loss per day.
3. A limitation of this study is that the researchers only studied a small sample, so the results cannot necessarily be generalized to the wider population of adolescent girls.

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