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The relationship between body weight, dietary patterns, and menstruation duration and the incidence of anemia among female adolescents

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Abstract

Background: Anemia is a common health problem among female adolescents and may be influenced by several factors, including body weight, dietary patterns, and menstruation duration.

Purpose: to determine the relationship between body weight, dietary patterns, and menstruation duration with the incidence of anemia among female adolescents

Method: This was a quantitative study with a cross-sectional design. The population consisted of all female adolescents, with a total sample of 80 respondents selected using a total sampling technique. The independent variables were body weight, dietary patterns, and menstruation duration, while the dependent variable was anemia. Data was collected using a structured questionnaire and hemoglobin measurement with a digital method. Data analysis was performed using univariate and bivariate analyses with the Chi-Square test ($\alpha = 0.05$).

Results: The results showed that most respondents had normal body weight (46.25%), good dietary patterns (42.5%), normal menstruation duration (58.75%), and normal hemoglobin levels (48.75%). Bivariate analysis revealed significant relationships between body weight and anemia ($p = 0.000$), dietary patterns and anemia ($p = 0.001$), as well as menstruation duration and anemia ($p = 0.003$).

Conclusion: Body weight, dietary patterns, and menstruation duration were significantly associated with the incidence of anemia among female adolescents.

Suggestion: Teenagers are expected to maintain a healthy and balanced diet by paying attention to fulfilling their micronutrient intake.

Keywords: Anemia; Body Weight; Dietary Patterns; Menstruation Duration.

INTRODUCTION

Adolescence is a transitional stage from childhood to adulthood, marked by psychological and physical changes. During this period, significant bodily transformations occur as the body prepares for reproductive maturity, including changes in height and weight. One of the most common health problems experienced by female adolescents is anemia (Muthmainnah, Patimah, & Septiyanti, 2021).

Anemia is a condition in which the hemoglobin (Hb) level in the blood is below normal, leading to a deficiency of red blood cells that carry oxygen

throughout body tissues. In adolescent girls, anemia is generally caused by iron deficiency due to unbalanced dietary habits, blood loss during menstruation, and increased nutritional requirements during the growth period. The normal hemoglobin concentration for adolescent girls is 12 g/dl, for non-pregnant women of reproductive age is 12 g/dl, and for pregnant women is 11 g/dl (Karimah, Pratiwi, & Puriastuti, 2024).

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The impact of anemia on adolescent girls includes stunted growth, increased susceptibility to infections, decreased physical fitness, reduced learning performance, and, in the long term, higher risks during pregnancy and childbirth (Astutik & Ertiana, 2018). Adolescent girls who suffer from anemia are more likely to experience anemia during pregnancy than those who do not, which can lead to low birth weight (LBW) infants and stunted children. This occurs due to low hemoglobin levels, resulting in insufficient oxygen and nutrient supply to the fetus during pregnancy, which hinders fetal growth and development (Rahayu, 2021).

Based on the Indonesia Health Survey (SKI, 2023), the prevalence of anemia in Indonesia reached 16.3% among those aged 5–14 years and 15.5% among those aged 15–24 years (Ministry of Health of the Republic of Indonesia, 2024). Data from the Central Lampung District Health Office shows a high prevalence of anemia cases. In 2023, among 21% of the target population screened for hemoglobin levels, the prevalence of anemia was recorded at 5.14% (Central Lampung Health Service, 2024).

Several factors can cause anemia among adolescents, including nutritional status, dietary patterns, and menstrual patterns (Alfianingsih & Purwito, 2024). Other contributing factors include menstrual cycles, socioeconomic status, nutritional intake, and eating habits (Indrawatiningsih, Hamid, Sari, & Listiono, 2021). Previous research revealed that nutritional status significantly influences the incidence of anemia in adolescent girls ($p = 0.000$) (Jannah & Anggraeni, 2021). Other research studies also state the same thing, that an unbalanced diet causes an imbalance between energy intake and energy expenditure for daily activities (Ayu, Zuraida,

& Pramesona, 2024). In addition, other studies have found that the longer the duration of menstruation, the greater the likelihood of anemia (Alfianingsih & Purwito, 2024).

RESEARCH METHOD

This research employed an observational analytic design with a cross-sectional approach. The population consisted of all female students at SMA Pondok Pesantren Rowdhotul Alimir Robbaniy (LDII), Central Lampung, totaling 80 individuals in 2025. The sample size was determined using the total sampling technique, meaning that all members of the population were included as study subjects ($n = 80$). The inclusion criteria for the respondents were: 1) Female students of SMA Pondok Pesantren Rowdhotul Alimir Robbaniy (LDII), Central Lampung; 2) Not currently menstruating during data collection; 3) Not fasting during data collection.

The research instruments included a questionnaire on dietary patterns and menstruation duration. The dietary pattern variable was measured using the Food Frequency Questionnaire (FFQ) method, which assessed respondents' food consumption habits over the past month. Data analysis was carried out using univariate analysis to describe respondents' characteristics and bivariate analysis using the Chi-Square test to determine the relationship between body weight, dietary patterns, and menstruation duration (independent variables) and the incidence of anemia (dependent variable).

This research obtained ethical approval from the Research Ethics Committee of Universitas Indonesia Maju, with reference number 2692/Sket/Ka-Dept/RE/UIMA/VII/2025.

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RESEARCH RESULT

Table 1. Characteristics of Respondents (N= 80)

Variable	Result	p-value
Age (Mean±SD) (Range) (Year)	(15.88±.832) 15-17	
15	32/40.0	
16	25/31.2	
17	24/28.8	
Anemia Status (n/%)		
Not Anemia	39/48.7	
Mild Anemia	20/25.0	
Moderate Anemia	17/21.3	
Devere Anemia	4/5.0	
Body Weight (n/%)		
Very thin	11/13.7	
Thin	14/17.5	
Normal	37/46.3	0.000
Oevrweight	2/2.5	
Obese	16/20.0	
Dietary Pattern (n/%)		
Good	34/42.5	
Pair	21/26.3	0.001
Poor	25/31.2	
Menstruation Duration (n/%)		
Normal	47/58.7	
Abnormal	33/41.3	0.003

The data in Table 1 show that most respondents were 15 years old (40%), 16 years old (31.25%), and 17 years old (28.75%). Based on body weight, the majority of respondents had normal weight (46.25%), followed by 17.5% who were classified as thin and 13.75% as very thin. Sixteen respondents (20%) were obese, and two respondents (2.5%) were overweight. Regarding dietary patterns, 42.5% of respondents had good eating habits, 26.25% had fair habits, and 31.25% had poor dietary habits. For menstruation duration, 58.75% had normal menstruation, while 41.25% experienced abnormal durations. As for anemia status, 48.75% were non-anemic, 25.0% had mild anemia, 21.25% had moderate anemia, and 5%

had severe anemia.

The Chi-Square test results showed body weight, $p = 0.000$ (< 0.05), indicating a significant relationship between body weight and anemia incidence. For dietary patterns, $p = 0.001$ (< 0.05), indicating a significant relationship between dietary patterns and anemia incidence. For menstruation duration, $p = 0.003$ (< 0.05), indicating a significant relationship between menstruation duration and anemia incidence. Thus, the study concludes that body weight, dietary habits, and menstruation duration are all significantly related to the incidence of anemia among female adolescents.

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DISCUSSION

The results of this study showed a significant relationship between body weight and the incidence of anemia among female adolescents, with a p -value of 0.000 (<0.05). This finding indicates that body weight influences the risk of anemia, where adolescents with very low or excessive body weight tend to have a higher proportion of anemia compared to those with normal weight.

The World Health Organization states that nutritional status is one of the main factors causing anemia in adolescents, particularly undernutrition, which reduces the body's iron reserves (World Health Organization, 2020). Poor or inadequate nutrition often leads adolescents to fail to meet balanced dietary requirements, such as skipping breakfast or consuming insufficient iron-rich foods (Awalinda, Safika, Wahyuni, Ismail, & Afiah, 2025). Previous research found a significant relationship between nutritional status and hemoglobin levels in adolescent girls (Husnah, Fitriani, & Panjaitan, 2023). In line with other research studies that reported that nutritional status significantly affects the incidence of anemia, with a p value of 0.000, which indicates a strong relationship (Jannah & Anggraeni, 2021).

According to the researchers, adolescents with low body weight likely have inadequate dietary intake or restrictive eating habits, leading to insufficient iron consumption. This supports the notion that nutritional interventions, especially encouraging balanced and iron-rich diets, are essential to reduce anemia prevalence among adolescent girls. In this study, it was assumed that the body weight measurements of all respondents were conducted accurately and reflected their actual nutritional condition. Respondents' body weights were assumed to be stable at the time of measurement and unaffected by temporary factors such as hydration or illness. Therefore, body weight was used as a valid indicator of nutritional status to analyze its relationship with anemia incidence.

The results also showed a significant relationship between dietary patterns and anemia among female adolescents, with a p -value of 0.001 (<0.05). This suggests that poorer dietary habits are associated with a higher risk of anemia.

Previous research studies found that the average consumption of snacks among teenagers was in the "moderate" category. Most snacks available around schools and residential areas provide low levels of protein and energy, contributing minimally to daily nutritional intake (Muhimah & Farapti, 2023). Many adolescents replace breakfast with snack foods, which are calorie-dense but lack essential nutrients such as proteins, vitamins, and minerals (Agapa, Al-faida, & Ibrahim, 2024). Adolescents often prefer unhealthy foods, such as fast food, soft drinks, and sweetened condensed milk, which have high sugar content and limited nutritional value (Mokoginta, Budiarto, & Manampiring, 2016). Other research studies have reported a strong correlation between poor diet and the incidence of anemia in adolescent girls (Dewi, Hamidah, Asmarawanti, Intan, & Salsabila, 2024).

In this study, the researchers assumed that respondents' dietary patterns, as measured by the questionnaire, accurately reflected their usual food consumption habits. The "good," "fair," and "poor" dietary categories were assumed to represent variations in nutrient intake, particularly in iron, folate, vitamin B12, and other macronutrients essential for hemoglobin production. Additionally, the researchers assumed that differences in dietary patterns were among the dominant factors influencing anemia incidence, while other variables such as chronic diseases or metabolic disorders had minimal impact.

The study also found a significant relationship between menstruation duration and anemia incidence, with a p -value of 0.003 (<0.05). This indicates that menstruation duration is one of the factors influencing anemia among female adolescents.

Adolescents with abnormal menstruation durations had higher rates of anemia compared to those with normal menstrual cycles. Abnormal menstruation, particularly when lasting longer than seven days or accompanied by excessive bleeding (menorrhagia) can cause substantial blood and iron loss. Continuous iron loss, when not balanced by adequate dietary intake, lowers hemoglobin levels and ultimately causes anemia.

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Abnormal or excessive menstrual bleeding leads to significant iron loss, thereby increasing the risk of iron-deficiency anemia (Qoriaty & Dhewi, 2016). The World Health Organization also emphasized that menstrual disorders, particularly menorrhagia, are a key factor in anemia among adolescent girls (World Health Organization, 2017). A previous study also found that adolescents with abnormal menstrual duration were more likely to experience anemia compared to those with normal menstruation (Irmalian, Susmini, & Dewi, 2025). Prolonged menstruation is associated with greater blood loss, which directly increases anemia risk.

In this study, it was assumed that respondents accurately reported their menstruation durations, allowing these data to serve as valid indicators of anemia risk. Both normal and abnormal menstruation durations were assumed to directly influence hemoglobin levels through iron loss during menstruation. The researchers also assumed that variations in menstruation duration were a major factor affecting anemia incidence, while other external influences such as diet or coexisting illnesses were considered less significant in this analysis.

CONCLUSION

There is a significant relationship between body weight, dietary patterns, and menstruation duration and the incidence of anemia among female adolescents at SMA Pondok Pesantren Rowdhotul Alimir Robbaniy (LDII), Central Lampung.

SUGGESTION

Female adolescents are advised to pay closer attention to their daily dietary patterns by consuming nutritionally balanced foods rich in iron, protein, folate, and vitamin C. They are also encouraged to reduce the consumption of fast food and caffeinated beverages, as these can inhibit iron absorption. Additionally, adolescents should regularly take iron supplementation tablets (Fe tablets) as recommended by healthcare professionals to prevent anemia.

REFERENCES

Agapa, N., Al-faida, N., & Ibrahim, N. S. I. (2024). Hubungan Aktivitas Fisik Dan Pola Makan

Dengan Kejadian Overweight Dan Obesitas di SD Inpres Karang Mulia Nabire. *Jurnal Ilmiah Husada Askara*, 1(1).

Alfianingsih, L., & Purwito, D. (2024). Status Gizi Pola Makan, Pola Menstruasi dan kejadian anemia pada remaja putri. *Jurnal Ilmiah Wahana Pendidikan*, 10(6), 550-563.

Astuti, R. Y., & Ertiana, D. (2018). *Anemia dalam kehamilan*. Pustaka Abadi.

Awalinda, S. S., Safika, E. L., Wahyuni, L. E. T., Ismail, I., & Afiah, N. (2025). Hubungan Asupan Zat Besi, Protein dan Kebiasaan Melewatkan Makan dengan Kejadian Anemia pada Remaja Putri di SMP Negeri 16 Samarinda. *PHARMADEMICA: Jurnal Kefarmasian dan Gizi*, 5(1), 79-90.

Ayu, S. P., Zuraida, R., & Pramesona, B. A. (2024). Faktor-faktor yang memengaruhi kejadian anemia pada siswi SMP. *HOLISTIK JURNAL KESEHATAN Yчpedumeny: Universitas Malahayati Bandar Lampung*, 18(8), 1001-1010.

Central Lampung Health Service. (2024). Profil Kesehatan Kabupaten Lampung Tengah Tahun 2023.

Dewi, S. K., Hamidah, E., Asmarawanti, A., Intan, N., & Salsabila, S. (2024). Hubungan Pola Makan dengan Kejadian Anemia Pada Remaja Putri. *MAHESA: Malahayati Health Student Journal*, 4(9), 4169-4176.

Husnah, R., Fitriani, F., & Panjaitan, A. L. (2023). Hubungan Status Gizi Dengan Kejadian Anemia Pada Remaja. *Jurnal Ners*, 7(2), 871-875.

Indrawatiningsih, Y., Hamid, S. A., Sari, E. P., & Listiono, H. (2021). Factors Affecting the Occurrence of Anemia in Young Women. *Batanghari University Scientific Journal, Jambi*, 21(1), 331-337.

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- Irmalian, F., Susmini, S., & Dewi, N. (2025). Pengetahuan Tanda Dan Gejala Anemia Saat Menstruasi Berhubungan Dengan Perilaku Pencegahan. *Nursing News: Jurnal Ilmiah Keperawatan*, 9(2), 134-145.
- Jannah, D., & Anggraeni, S. (2021). Status Gizi Berhubungan Dengan Kejadian Anemia Pada Remaja Putri Di Sman 1 Pagelaran Pringsewu. *Jurnal Ilmiah Kesehatan*, 10(1), 42-47.
- Karimah, N., Pratiwi, D. K. S., & Puriastuti, E. A. (2024). The Relationship of Hemoglobin Levels with Menstrual Patterns in Adolescent Girls at Surakarta. *Jurnal Ilmiah Kebidanan (The Journal of Midwifery)*, 12(1), 56-62.
- Ministry of Health of the Republic of Indonesia. (2024). Survei Kesehatan Indonesia (SKI) 2023. Retrieved from: <https://www.badankebijakan.kemkes.go.id/hasil-ski-2023/>
- Mokoginta, F. S., Budiarmo, F., & Manampiring, A. E. (2016). Gambaran pola asupan makanan pada remaja di Kabupaten Bolaang Mongondow Utara. *eBiomedik*, 4(2).
- Muhimah, H., & Farapti, F. (2023). Ketersediaan dan Perilaku Konsumsi Makanan Jajanan dengan Status Gizi pada Anak Sekolah Dasar. *Media Gizi Kesmas*, 12(1), 575-582.
- Muthmainnah, M., Patimah, S., & Septiyanti, S. (2021). Hubungan KEK dan Wasting dengan Kejadian Anemia Pada Remaja Putri di Kabupaten Majene.
- Qoriaty, N. I., & Dhewi, S. (2022). Hubungan Siklus dan Lama Menstruasi Dengan Kejadian Dismenore Pada Mahasiswi FKM Uniska Banjarmasin 2015. *Prosiding Penelitian Dosen UNISKA MAB*, (1).
- Rahayu, D. T. (2021). Anemia In Pregnancy with Stunting in Gayam Village District Gurah Kediri. *Jurnal Kebidanan Midwifery*, 7(1), 81-94.
- World Health Organization. (2017). Nurturing the health and wealth of nations: the investment case for breastfeeding. Retrieved from: <https://www.who.int/publications/m/item/nurturing-the-health-and-wealth-of-nations-the-investment-case-for-breastfeeding>
- World Health Organization. (2020). Global anaemia reduction efforts among women of reproductive age: impact, achievement of targets and the way forward for optimizing efforts. Retrieved from: <https://www.who.int/publications/i/item/9789240012202>

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