

## THE RELATIONSHIP BETWEEN IRON TABLET COMPLIANCE AND HEALTHY DIETARY PATTERNS AND ANEMIA STATUS AMONG FEMALE ADOLESCENTS

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### Abstract

*The adolescent phase is a nutritionally vulnerable phase because it requires more energy and nutrients for growth and development. Unbalanced nutrient consumption can lead to nutritional deficiencies. Adolescent girls with irregular eating patterns, having food restrictions, often buying snacks because they follow friends, often skipping breakfast, eating fast food, and junk food can cause anemia. Consumption habits that inhibit iron absorption will affect hemoglobin levels. Efforts to prevent anemia in adolescent girls include having a healthy lifestyle and providing iron tablet supplements taken regularly. The purpose of this study was to determine the relationship between adherence to iron tablet consumption and a healthy diet with anemia status in adolescent girls. The method used in this study was analytical research with a cross-sectional approach. The sample consisted of 30 female adolescents at SMPN 1 Banjarnegara. The sampling technique used was cluster sampling. The statistical test used was correlation with chi-square. The results showed a relationship between adherence to iron tablet consumption and anemia status (p-value 0.00), and there was no relationship between a healthy diet and anemia status (p-value 0.279).*

**Keyword:** Anemia Status, Fe Tablets, Healthy Diet

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### 1. Introduction

Adolescence is a nutritionally vulnerable phase due to accelerated growth and development, which requires more energy and nutrients. As a result, growth and development that are not balanced with adequate nutrient consumption can lead to nutritional deficiencies [1]. In addition, poor dietary habits among young women can increase the risk of anemia, as inadequate iron intake results in insufficient materials for

red blood cell formation, causing reduced oxygen transport and ultimately anemia [2]. Moreover, poor dietary habits in young women may negatively affect intelligence development, reduce learning ability and concentration, disrupt growth so that optimal height is not achieved, and decrease physical fitness, which may be reflected in a pale appearance [3].

Therefore, efforts to prevent anemia in young women include

adopting a healthy lifestyle and ensuring regular consumption of iron tablet supplements [4]. At the same time, a balanced diet is essential to achieve adequate nutritional intake; however, young women often practice improper dieting behaviors, such as food restrictions, reduced eating frequency, and limiting food intake to prevent obesity. Consequently, these practices may lead to growth disorders and deficiencies of essential nutrients, including iron [5]. Furthermore, teenage girls with irregular eating patterns such as food restriction, frequent snacking due to peer influence, skipping breakfast, and consuming fast food and junk food are at increased risk of anemia [4].

In addition, these conditions, combined with the habit of consuming beverages that inhibit iron absorption, can further affect hemoglobin levels. Meanwhile, adolescents with high levels of social activity may be influenced by peer groups, such as eating together at fast-food restaurants, which typically offer foods high in fat and calories, potentially contributing to obesity and acting as a trigger for other health problems [6]. Moreover, unbalanced dietary patterns among adolescent girls such as infrequent vegetable consumption and excessive intake of carbohydrate- and fat-rich foods without adequate protein, vitamin, and mineral sources remain a significant risk factor for iron-deficiency anemia [7].

## 2. Method

This analytical study used a cross-sectional design. The participants were seventh-grade female students at SMP N 1 Banjarmangu, totaling 30 respondents, selected using cluster sampling. Data were collected through questionnaires to measure compliance with iron tablet intake and healthy dietary patterns, while hemoglobin levels were assessed using a hemoglobinometer. The relationship between variables was analyzed using the chi-square test.

## 3. Results and Discussion

### a. Compliance With Taking Fe Tablets With Anemia Status

**Table 1.** Cross-table and correlation of compliance with taking iron tablets with anemia status in adolescent girlc

Compliance with Taking Iron Tablets	Anemia				Total	p-value
	No anemia		Yes Anemia			
	N	%	n	%		
Compliant	27	90	3	100	100	
Non-compliant	0	0	3	100	100	0.000
Total	27	90	3	10	100	

Based on Table 1, among the 30 respondents, 27 adolescents (90%) who were compliant with iron tablet consumption were not anemic. The results of the chi-square correlation test showed a p-value of 0.000, indicating a significant relationship between compliance with iron tablet consumption and anemia status.

This finding indicates that adolescents who are not anemic tend to be those who consistently consume iron supplements as recommended by the government. Iron is an essential element for hemoglobin formation and plays an important role in oxygen transport, storage, and utilization in the body. During adolescence, iron requirements increase as this period represents an active phase of growth, including the development of hemoglobin, myoglobin, and cytochrome c [9].

This is consistent with the theory that inadequate iron intake leads to insufficient materials for red blood cell formation, resulting in reduced oxygen-carrying capacity and ultimately causing anemia [7]. Adequate iron intake, therefore, is essential to prevent anemia, particularly among adolescent girls who are at higher risk due to rapid growth and menstrual blood loss.

These findings are also supported by previous studies, which have shown a significant effect of adherence to Fe tablet consumption on anemia prevention through increased

hemoglobin levels [3]. Generally, continuous consumption of Fe tablets for more than four weeks can increase hemoglobin levels by approximately 2 g/dL [8]. Previous research also reported a significant effect of Fe tablet consumption on anemia prevention in adolescent girls, with a p-value of 0.000 [10]. Similarly, another study found a significant relationship between iron tablet consumption and the incidence of anemia in adolescent girls, with a p-value of 0.038 [11].

b. Healthy Eating Pattern and Anemia Status

**Table 2.** Cross-table and correlation between Healthy Eating Patterns and anemia status in adolescent girls

Healthy Eating Patterns	Anemia				Total	p-value
	No anemia		Yes Anemia			
	n	%	n	%		
Healthy	11	100	0	0	100	
No healthy	16	84,2	3	15,8	100	0.000
Total	27	90	3	100	100	

Based on Table 2, among the 30 respondents, most adolescents with unhealthy eating patterns did not experience anemia. Specifically, 16 respondents (84.2%) had unhealthy eating patterns but were not anemic. The correlation test between healthy eating patterns and anemia status showed a p-value of 0.279, indicating that there was no significant relationship between healthy eating patterns and anemia status among adolescent girls.

Dietary patterns are generally considered factors that influence nutritional status, including anemia. Dietary patterns can be assessed through various approaches, such as evaluating the frequency of food consumption and overall nutrient intake. The frequency of food consumption reflects daily food choices, while nutrient intake represents the direct outcome of these choices [4,7]. Unhealthy eating patterns may result from limited food variety, low consumption of animal-based foods, and dieting behaviors. Both the quality and

quantity of food intake play an important role in maintaining optimal health [12,13]. Currently, many adolescents tend to prefer instant or fast foods over vegetables, which may lead to insufficient intake of essential vitamins and minerals [14].

However, anemia status is not determined solely by dietary patterns, as it is influenced by multiple factors. This was also observed in the present study, where healthy eating patterns did not show a significant association with anemia status among adolescent girls. One possible explanation is that many respondents remained non-anemic despite having unhealthy eating patterns due to their compliance with iron tablet consumption. This finding is consistent with previous studies reporting no significant relationship between dietary patterns and anemia, with a p-value of 0.104 [9]. Nevertheless, other studies have reported contrasting results, showing a significant association between dietary patterns and anemia incidence, with a p-value of 0.004 [15].

**4. Conclusion**

The study found a significant relationship between compliance with iron tablet supplementation and anemia status (p=0.000). In contrast, no significant association was observed between healthy eating patterns and anemia status (p=0.279). For future research, it is recommended to assess the impact of dietary interventions by not only using questionnaires but also implementing controlled healthy diet programs and measuring hemoglobin levels before and after the intervention.

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