



THE RELATIONSHIP BETWEEN NUTRITIONAL KNOWLEDGE AND COMPLIANCE WITH FE TABLET CONSUMPTION WITH THE INCIDENCE OF ANEMIA

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ABSTRACT

Anemia that occurs in adolescents can cause the impact of physical growth delays, behavioral and emotional disorders. When the condition is acute, anemia can lead to death, and increase the risk of disorders during pregnancy later. Knowledge of anemia and adherence to taking low Fe tablets are one of the important factors in the incidence of anemia. The purpose of this study is to analyze the relationship between nutritional knowledge and compliance with Fe tablet consumption and the incidence of anemia in adolescent girls in the working area of the Karas Health Center, Fakfak Regency in 2025. This type of research uses a survey research method with a quantitative approach with a cross sectional research design. This research was conducted in the working area of the Karas Health Center, Fakfak Regency from June to July 2025. The sample in this study amounted to 81 adolescents were selected with purposive sampling. The population of this study is all adolescents aged 12-18 years in the Karas health center area. The independent variables are knowledge and compliance. The dependent variable is the anaemia of the body. The data were collected by questionnaire and haemoglobin test. Analysis using chi square. Chi Square analysis showed that there was a significant relationship between adherence to taking blood plus tablets and the incidence of anemia p value <0.001 (< 0.05). The results of the study showed that there was a significant relationship between knowledge about nutrition and the incidence of anemia p value <0.001 (< 0.05). The higher the knowledge of a teenager, the more anemia will be avoided. The more obediently a person takes Fe tablets, the more they avoid anemia.

Keywords: adolescent; anemia; knowledge; obedience

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INTRODUCTION

Anemia is a condition in which the number of red blood cells or hemoglobin (Hb) levels in the blood is lower than normal values for groups of people by age and sex. In healthy people, red blood grains contain hemoglobin, which is red blood cells that are responsible for carrying oxygen and other nutrients such as vitamins and minerals to the brain and to body tissues. (Larasati, 2022)(Astuti, 2023). According to World Health Organization (WHO), anemia is defined as a condition in which the number of red blood cells (homoglobin) does not meet the body's physiological needs (Apriyanti, 2019). Normal Hb levels in men and women are different. The Hb level for anemic men is less than 13.5 g/dl, while Hb levels in women are less than 12 g/dl. Anemia can cause several clinical symptoms. Anemia is still the world's biggest health problem that affects women of childbearing age, pregnant women, school-age children and adolescents. The World Health Organization (WHO) estimates that 42% of children under the age of 5 and 40% of pregnant women worldwide experience anemia. In 2013, 37.1% of adolescent girls affected by anemia were affected by anemia, while in 2018 there was an increase of 48.9% in the age range of 15-24 years, and 23-34 years (Waluyo D, 2022).

Anemia is a global health problem that deserves attention, especially in developing countries such as Indonesia. It is estimated that about 1/3 of the world's population suffers from anemia. The prevalence of anemia in Indonesia is quite high. The reason is, according to the Ministry of Health

of the Republic of Indonesia, the prevalence rate of anemia in adolescents aged 15-24 years is 32%, meaning that it is estimated that as many as 3-4 adolescents out of a total of 10 adolescents suffer from anemia. The proportion of anemia in women (27.2%) is higher than in men (20.3%). However, adolescent girls are one of the populations that are susceptible to anemia (Malaka NMA, 2023)(Kusnadi, 2021).

In Papua Province in 2018, the prevalence of anemia in pregnant women was 81% of 3,087 pregnant women and in 2019 pregnant women who experienced anemia was 79.3% of 3063 pregnant women, while the coverage data of iron tablets for pregnant women in Papua Province (2018). Of the 3,087 pregnant women who received 90 tablets of Fe (Fe₃), only 1,631 pregnant women (52.1%), the remaining 1,456 pregnant women only received 30 tablets of Fe (Fe₁) and the coverage of Fe₃ in 2019 was 61.0%.(Latief, 2023). Anemia that occurs in adolescents can cause the impact of physical growth delays, behavioral and emotional disorders. This can affect the growth and development process of brain cells so that it can have an impact on decreased immunity, weakness and hunger easily, impaired learning concentration, decreased learning achievement and can result in low work productivity. When the condition is acute, anemia can lead to death. Anemia that occurs in adolescent girls is also a risk of impaired physical and mental function, and can increase the risk of disorders during pregnancy later.(Hamidiyah, 2019).

Anemia causes blood to not sufficiently bind and transport oxygen from the lungs to the rest of the body. If the oxygen needed is not enough, it will result in difficulty concentrating, so that learning achievement decreases, physical endurance is low so that fatigue is easily done, physical activity decreases, easy to get sick because of low immunity, as a result of which they rarely go to school or work. The consequences of this anemia if not intervened for a long time will cause several diseases such as congestive heart failure, bacterial infections, thalassemia, immune system disorders, and meningitis (Safitri, 2019).

It is known that the prevention and treatment of anemia that has been regulated by the Ministry of Health of the Republic of Indonesia, including consuming balanced nutritious and nutrient-rich foods (iron both animal and plant food sources), consuming at least 90 blood-boosting tablets during pregnancy and will be increased in dose when the mother experiences anemia, maternal personal hygiene, prevention and treatment of diseases. (Ministry of Health of the Republic of Indonesia, 2023)

The Ministry of Health through the Director General of Public Health issued a circular letter No. HK.03.03/V/0595/2016 regarding the administration of blood supplement tablets to pregnant women and women of childbearing age. The government is making preventive efforts by providing blood-boosting tablets for adolescent girls and women of childbearing age, especially those who are pregnant. These tablets are given for free, while for fertile women who are not pregnant, they are encouraged to consume blood-boosting tablets independently.(Kesmas, 2016)

The operational strategy for overcoming nutritional anemia in rematri is described in 2 main activities (Ministry of Health, 2016). Communication, Information and Education (KIE) KIE activities such as counseling, counseling, promotion, campaigns and others about anemia and TTD are very important activities in order to improve family knowledge, attitudes and behaviors about health and nutrition, especially for rematri. Promotion is also carried out to increase family consumption in the consumption of iron sources from animals, vegetables and fruits that contain a lot of vitamin C to increase the absorption of refined iron from vegetable sources. Blood Supplement Tablets (TTD) Blood supplement tablets (TTD) are nutritional supplements that contain 60 mg of elemental iron and 0.5 mg of folic acid (as recommended by WHO). TTD when taken regularly and according to the rules can prevent and overcome nutritional anemia. For rematri, it is

recommended to take TTD regularly with a dose of 1 tablet every week and 1 tablet every day during menstruation (Putri R. D., 2017)

Knowledge about anemia and low nutrition is one of the important factors in the incidence of anemia. Research states that there is a very significant relationship (p value <0.001) between knowledge and the incidence of anemia. However, many previous researchers reported that adolescents' knowledge of nutrition was very low, one of which was a study conducted in the city of Bogor reported that almost 50% of high school students had poor knowledge about nutrition that caused anemia. However, research analyzing adolescents' knowledge about nutrition and compliance is still very minimal and reported in the Papua region, especially in Fakfak Regency. This makes researchers interested in conducting research and examining the relationship between nutritional knowledge and compliance with Fe tablet consumption and the incidence of anemia in adolescent girls in the working area of the Karas Health Center, Fakfak Regency in 2025 (Putri K. M., 2018) (Dieniyah, 2019). This study aimed to analyze the relationship between nutritional knowledge and compliance with Fe tablet consumption and the incidence of anemia in adolescent girls

METHOD

This type of research uses a survey research method with a quantitative approach with a cross-sectional research design (Abduh, 2023). This research was carried out in the working area of the Karas Health Center, Fakfak Regency. The research will be conducted from June to July 2025. The population of this study is all adolescents aged 12-18 years in the Karas health center area as many as 101 people. The total sample for this study is 81 adolescent girls. The sampling technique used by the researcher in this study is purposive sampling, where the researcher sets the inclusion and exclusion criteria from the sample in this study, namely: Adolescents who are at least 12 years old and maximum 18 years old at the time of the study. Willing to be a respondent. Able to read and write. The data collected in this study is primary data, namely data obtained directly from respondents through filling out questionnaires.

The questionnaire used will assess knowledge about nutrition and compliance in consuming Fe tablets. The questionnaire used was an adoption of research (Runkat, 2019). Which is valid and reliable testing before used. The questionnaire on nutrition and blood supplement tablets contains 16 questions consisting of information related to nutrition, blood supplement tablets, and anemia, each question will be given a score of 1 if true and 0 if false. Meanwhile, the compliance-related questionnaire contains 4 questions that assess the consumption of blood-boosting tablets. Anemia is defined as a deficiency of haemoglobin (Hb) in the blood characterized by a measurement result of less than <12 g/dl. This analysis is used to prove the relationship between knowledge and anemia and the relationship of adherence with anemia is that the Chi-Square test can be drawn Conclusion if the value of p is <0.05 then there is a relationship and if $p \geq 0.05$ then there is no relationship.

RESULT

Table 1.
Frequency Distribution Characteristics of 81 Respondent

Variable	Frequency	Percentage
Knowledge		
Low	41	50.62 %
Tall	40	49.38 %
Compliance		
Non-compliant	44	54.32 %
Obedient	37	45.68 %
Incidence of Anemia		
Anemia	35	43.21 %
No Anemia	46	56.39 %

The categorized knowledge distribution table shows that half of the respondents have below-average knowledge. However, the difference between respondents with low and high knowledge was only 1 person. So that the distribution is almost even. The results of the study showed that the majority of respondents, namely 44 people (54.32%) were not compliant in consuming Fe tablets. Based on research, it is known that there are still adolescents who have haemoglobin levels below 12g/dl, namely 35 people (43.21%).

The average knowledge score is either 9.9 or 10. where the highest point is 15 for 16 questions and the lowest is 4. These results show that no respondent was able to answer 100% of the questions correctly. However, the study found that the minimum Hb value was 9 g/dl and the average was 12.1 g/dl. Same as cut off point anemia according to theory. However, there are still respondents with Hb levels of 9.4 g/dl.

Table 2.
Frequency Distribution of Chicken Rolade Reception Frequency

Category	Statistical distribution				Total
	Mean	SD	Min	Max	
Knowledge	9.94	3.41	4	15	81
Haemoglobin Levels	12.1	1.32	9.4g/dl	14.4g/dl	81

Table 3.
Chi Square Test Relationship of Knowledge with Incidence of Anemia

Knowledge	Anemia		No Anemia		Total	P value	95% Confidence Interval	
	f	%	f	%				
Low	34	41.9%	7	8.6%	41	<0.001	22.05	7882.13
Tall	1	1.23%	39	48.15%	40			
Total	35	43.13%	46	56.7%	81			

Chi Square analysis showed that there was a significant relationship between Knowledge about Nutrition and the incidence of anemia p value <0.001 (< 0.05). The results of the study showed that almost all respondents who had knowledge about low nutrition experienced anemia. This also applies to respondents who are highly knowledgeable almost all of whom do not experience anemia. Chi Square *analysis* showed that there was a significant relationship between adherence to taking blood plus tablets and the incidence of anemia p value <0.001 (< 0.05). The results of the study showed that almost all respondents who complied in consuming Fe tablets did not experience anemia, namely 34 out of 37 people. Only 3 people experienced anemia in the group of respondents who obediently took Fe tablets.

Table 4.
Chi Square Test Relationship of Compliance with Anemia Incidence

Compliance	Anemia		No Anemia		Total	P value	95% Confidence Interval	
	f	%	f	%				
Non-compliant	32	39.5%	12	14.8%	44	<0.001	7.10	172.35
Obedient	3	3.7%	34	41.9%	37			
Total	35	43.13%	46	56.7%	81			

DISCUSSION

The Relationship of Knowledge with the Incidence of Anemia

The results of the study showed that there was a significant relationship between knowledge about nutrition and the incidence of anemia p value <0.001 (< 0.05). The higher the knowledge of a teenager, the more anemia will be avoided (the higher the haemoglobin level). This result is in line with the study reported by Safitri & Maharani (2019) entitled "The relationship between nutritional knowledge and the incidence of anemia in adolescent girls at SMP Negeri 13 Jambi City" that there is a relationship between nutritional knowledge and the incidence of anemia in adolescent

girls at SMP Negeri 13 Jambi City ($p\text{-value}=0.035 < \alpha 0.05$). From the results of this study, it is hoped that SMP Negeri 13 will collaborate with the Tahtul Yemen Health Center in providing education through counseling to increase knowledge about a balanced nutritional diet in adolescent girls (Ade tyas Mayasari, 2021). This is in accordance with the theory, that a good knowledge of the importance of nutritious foods allows one to know which foods are rich in iron, and other nutrients that help increase haemoglobin levels (Aryanti et al, 2023). The level of knowledge in adolescent girls can affect the occurrence of anemia, because knowledge can affect behavior and lifestyle as well as nutrient intake (Charles Shapu, 2020). Lack of knowledge about anemia, its signs, impacts, and prevention will result in a small intake of nutrients containing iron, protein, and vitamin C so that nutrient intake in adolescents cannot be met (Hashemzadeh, 2019). It is hoped that the results of this research can be used as a source of information, can be used as input to stakeholders in program planning, especially the local health center and schools in increasing knowledge in promotional efforts for young women about anemia considering that the level of knowledge in this study is still mostly lacking.

The Relationship of Compliance with the Incidence of Anemia

Chi Square *analysis* showed that there was a significant relationship between adherence to taking blood plus tablets and the incidence of anemia $p\text{ value} < 0.001 (< 0.05)$. The results of the study showed that almost all respondents who complied in consuming Fe tablets did not experience anemia, namely 34 out of 37 people. This result is in line with the study (Astuti et al 2024) entitled "Compliance of Taking Fe Tablets Against the Incidence of Anemia in Adolescent Girls", the study reported that the results of this study showed that as many as 106 female students did not comply with taking Fe tablets and 66 students experienced anemia, with a $p\text{-value}$ of 0.036 (< 0.05). Supplementing with blood-boosting tablets to adolescents is one of the government's ways to reduce the incidence of anemia. Supplementation of blood tablets with the right dosage is effective in increasing iron reserves if consumed regularly (Agustina, 2024). However, the blood supplement program is considered less effective, because there are still many adolescent girls who are not compliant with consuming blood supplement tablets. The implementation of the blood supplement tablet program is carried out by giving blood supplement tablets with a dose of 1 tablet every week. Adolescent girls can be said to be obedient in consuming blood-boosting tablets if they consume 1 tablet every week or 4 tablets in one month (Widiastuti and Rusmini, 2019).

CONCLUSION

The higher the knowledge of a teenager, the more anemia will be avoided. The more obediently a person takes Fe tablets, the more they avoid anemia.

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