

# Factors Associated with Adherence to Tablet FE Consumption in Adolescents

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## Abstract

**Background:** Anemia has a significant impact on people's health, especially in adolescent girls. Anemia in adolescents can inhibit psychomotor development, interfere with cognitive abilities and learning. Therefore, the problem of bleeding deficiency must be prevented and treated since adolescence with consuming blood tablets regularly. But, based on the data, there are still 4,444 adolescent girls who do not obey and realize the importance of taking blood-added tablets as an effort to prevent anemia. Thus, this study aimed to determine the correlation between the factors that relate to the obedience of consuming Fe tablet in adolescent girls.

**Method:** This study used observational analytics with a cross-sectional approach starting from March to July 2023 in SMAN 1 Bojongsoang. This research was conducted on 85 respondents. The data research instrument in this study used MMAS-8 questionnaire and additional questionnaire to explore the cause of disobedient of

consuming Fe tablet then were analyzed by using Spearman's rho test.

**Result:** The results showed that there was 16.5% samples with low obedience, 43.5% moderate obedience, and 40% high obedience. There was a relationship between Fe tablet's favor with obedience of consuming Fe tablet ( $r = -0.255$ ,  $p = 0.019$ ). There was no relationship of Fe tablet t's preferences ( $p = 0.927$ ), parent's alert ( $0.325$ ), teacher's alert ( $0.207$ ), inconvenience of taking Fe tablet ( $p = 0.623$ ), completed Fe tablet ( $0.547$ ), and forgetting to take Fe tablet with obedience of consuming Fe tablet ( $0.988$ ).

**Conclusion:** There was a relationship between Fe tablet's favor with obedience of consuming Fe tablet in adolescent girls in SMAN 1 Bojongsoang. Suggestions for education institution is to optimize the socialization about the risk of anemia and the urgency of consuming Fe tablet. Thus, for student can increase the obedience of consuming Fe tablet regularly.

Keywords: Anemia, Fe tablet, Obedience, Adolescent girls

## Introduction

Adolescence is a time of psychic, physical and mental changes, during which there is a transition from childhood to adulthood. The WHO organization defines youth as people between the ages of 10 and 24. At this age, when adolescents enter puberty, as many as 4,444 women will experience menstruation. Menstruation will bleed 16 to 33.2 cc and will lose iron  $\pm 1.3$  mg per day. In this condition, adolescent girls during menstruation are susceptible to anemia.(1)

Women of childbearing age tend to suffer from nutritional anemia because women menstruate every month and this is exacerbated by the lack of iron in the food they consume. Anemia is an iron deficiency caused by depleted iron stores due to the formation of hemoglobin.(2)

Anemia is a health problem that occurs throughout the world, especially in developing countries, including Indonesia. According to data obtained from the World Health Organization (WHO) in 2018, the incidence of anemia cases worldwide is quite high, including those that occur in adolescents, especially adolescent girls, by 26.2%, while the incidence of anemia cases is 26.2%. Anemia occurs in 49.1% of women.(3) The World Health Organization says more than 30% of the world's population suffers

from anemia.

The prevalence in developed countries is 4.3-20 and in developing countries 30-48 have iron nutrition anemia. Globally, 4,444 of the 43% of affected people had children, 38% of pregnant women, 4.444 of the 29% of women were not pregnant, and 29% of the 4,444 women of childbearing age were diagnosed with anemia.(4)

In Indonesia, iron deficiency anemia (iron nutrition anemia) is one of the nutritional problems that is still unresolved, both in pregnant women and adolescents. Based on RISKESDAS data in 2018, anemia in pregnant women increased by 11.8% compared to 2013. 37.1% of pregnant women were anemic in 2013 and 48.9% in 2018. This figure is due to the high rate of anemia in adolescent girls, especially in women of childbearing age by 25% and 17% (Kementerian Kesehatan RI. Surat Edaran tentang Pemberian Tablet Tambah Darah pada Remaja Putri dan Wanita Usia Subur.(5)

In general, anemia can reduce physical strength and the body's ability to fight infectious diseases. In adolescent girls, the impact of anemia can reduce the ability to concentrate and pay attention to schoolwork. Anemia in adolescent girls can be caused by irregular menstruation and menstruation, as well as a diet that is less nutritionally balanced. Eating a balanced diet can provide enough energy for the body, but on the other hand it can have an impact on decreasing brain capacity and decreasing interest in learning in adolescents.(6)

Anemia has a significant impact on people's health, especially in pregnant women, anemia pregnant women will cause bleeding in pregnant women, premature babies, low birth weight babies, heart, kidney, and brain disorders, death during childbirth. While anemia in adolescents can inhibit psychomotor development, interfere with cognitive abilities and learning. Aulakh R. Adolescent Anemia: Risk Factors.2016;. Therefore, the problem of bleeding deficiency must be prevented and treated since adolescence, because 4,444 adolescents will become pregnant later.(7)

Examining Means of Reaching Adolescent. Giving blood tablets is an effective way to overcome the problem of anemia. If consumed regularly then Hb levels will increase to. Raghvendra G. Weekly Iron Folate Supplementation in Adolescent Girls – An Effective Weekly Iron Folate Supplementation in Adolescent Girls – An Effective Nutritional Measure for the Management of Iron Deficiency Anaemia.2014;(May 2013). In addition, according to research, Falkingham et al (2010) stated that consuming

TTD can increase levels in women and adolescents and increase IQ in people with anemia.(8) A study conducted in India by Deshmukh et al (2008) states that Fe tablets have less impact if taken for three months in early pregnancy and it is recommended to store iron in sufficient quantities before pregnancy.(9)

Based on RISKESDAS 2018, it is known that the coverage of TTD received by adolescent girls is 76.2%, out of 76.2%, 80.9% receive TTD at school (students). Based on the figure of 80.9%, blood tablets consumed by adolescent girls  $\geq 52$  items are only 1.4%, while  $< 52$  items are 98.6% of the Indonesian Ministry of Health. Key Results of RISKESDAS 2018. 2018; That is, there are still 4,444 adolescent girls who do not realize the importance of taking blood-added tablets as an effort to prevent anemia.

Adherence of adolescent girls in taking Fe tablets is an indication of the success of the prevention and management program of anemia in adolescents. Non-adherence to consumption of Fe tablets can inhibit the benefits of iron supplementation thereby inhibiting the absorption of iron by the body. Similarly, if young women obediently take Fe tablets, then their bodies can inhibit iron absorption due to forward movement.(10)

According to Yuniarti (2015), adolescent girls are still not obedient to taking Fe tablets because they do not clearly understand Fe tablets and also because of the side effects of taking Fe tablets 51.8% of subjects experience side effects such as nausea, nausea, constipation, feces turn black causing non-compliance with Fe tablet consumption. Another reason is the taste of Fe tablets which are not easy to swallow and also smell fishy. Young women are also often depressed, do not remember and are also afraid to take Fe tablets.

According to Erwin's research (2017), adherence of adolescent girls in using Fe tablets is also influenced by young women's attitudes towards Fe tablets, specifically these attitudes are positive or negative. Adolescent girls who had a positive attitude were 4,444 more likely to consume Fe pellets compared to adolescent girls who had a negative attitude 4,444 were more likely to be non-compliant with Fe pellet consumption. The results of the chi-square statistical test obtained a p-value of 0.001 ( $p < 0.05$ ), so it can be concluded that there is a relationship between the attitudes of adolescent girls in adherence to Fe tablet consumption.

## Method

This study used observational analytics with a cross-sectional approach. The population of this study was 515 adolescent girls in SMAN 1 Bojongsoang. This research starting from March to July 2023. This research was conducted with 85 respondents based on Sopiudin Dahlan’s formula using proportionate stratified random sampling.

The research sample was according to the inclusion and exclusion criteria. The inclusion criteria in this research design were 1). Grade I-III students in SMAN 1 Bojongsoang ; 2). female students; 3). Present during the research; 4). willing to be a respondent. The exclusion criteria were those who uncooperative during the research. Data processing and analysis used the Spearman test to analyze the correlation between the factors that associated with the obedience of Fe tablet consumption. The significance of the test results was determined based on the p-value <0.05. The data research instrument in this study used MMAS-8 questionnaire and additional questionnaire to explore the cause of disobedient of consuming Fe tablet.

## Results

**Table 1**  
**Distribution of the Variable Characteristics**

No	Variable	Frequency (n)	Percentage (%)
1	Age (years)		
	15	6	7.1
	16	39	45.9
	17	35	41.2
	18	8	5.9
2	Fe tablet’s preferences		
	Yes	35	41.2
	No	50	58.8
3	Fe tablet’s favor		
	Yes	15	17.6
	No	70	82.4
4	Parent’s allert		
	Yes	36	42.4
	No	49	57.6
5	Teacher’s allert		
	Yes	39	45.9
	No	46	54.1
6	Inconvenience of taking Fe tablet		
	Yes	48	56.5
	No	37	43.5

7	Completed Fe tablet		
	Yes	14	16.5
	No	71	83.5
8	Forgetting to take Fe tablet		
	Yes	76	89.4
	No	9	10.6

As displayed in Table 1, most adolescent girls's aged 16 years (45.9%), almost all adolescent girls's respon no for Fe tablet's preferences (58.8%), almost all adolescent girls's respon no for Fe tablet's favor (82.4%), almost all adolescent girls's respon no for parent's alert (57.6%) and teacher's alert (54.1%) to make them obedience to consume Fe tablet regulary. Part of them agree that inconvinience of taking fe tablet become a factor to disobey in consuming fe tablet (56.5%). Almost of them incomplete of consume Fe tablet (83.5%), and almost all of them agree that forgetting to take Fe tablet as a factor to disobey of consuming Fe Tablet.

**Table 2**  
**Distribution of obedience of consuming Fe tablet**

Obedience of consuming Fe tablet	Frequency (n)	Percentage (%)
High	14	16.5
Moderate	37	43.5
Low	34	40

The results of table 2 showed that out of 43 adolescent girls had moderate obedience (43.5%), 34 adolescent girls had (40%) low obedience and 14 adolescent girls (16.5%) experienced high obedience.

**Table 3**  
**The correlation between factor and obedience of consuming Fe tablet**

No	Variable	<i>r</i>	<i>p</i>
1	Fe tablet t's preferences	0.010	0.927
2	Fe tablet's favor	-0.255	0.019
3	Parent's allert	-0.108	0.325
4	Teacher's allert	-0.138	0.207
5	Inconvenience of taking Fe tablet	0.054	0.623
6	Completed Fe tablet	0.067	0.545
7	Forgetting to take Fe tablet	-0.002	0.988

The results of table 3 showed that based on data analysis, the relationship

between Fe tablet's favor with obedience of consuming Fe tablet conducting coefficient correlation's value was  $(r) -0.255$  and  $p \text{ value} = 0.019 < \alpha = 0,05$ . Thus, there was a relationship between Fe tablet's favor with obedience of consuming Fe tablet ( $r -0.255$ ,  $p 0.019$ ). Then, there was no relationship of Fe tablet t's preferences ( $p 0.927$ ), parent's alert ( $0.325$ ), teacher's alert ( $0.207$ ), inconvenience of taking Fe tablet ( $p 0.623$ ), completed Fe tablet ( $0.547$ ), and forgetting to take Fe tablet ( $0.988$ ) with obedience of consuming Fe tablet because all  $p \text{ value} > \alpha = 0,05$

## Discussion

As displayed in Table 1, most adolescent girls's aged 16 years (45.9%), almost all adolescent girls's respon no for Fe tablet's preferences (58.8%), almost all adolescent girls's respon no for Fe tablet's favor (82.4%), almost all adolescent girls's respon no for parent's alert (57.6%) and teacher's alert (54.1%) to make them obedience to consume Fe tablet regulary. Part of them agree that inconvinience of taking fe tablet become a factor to disobey in consuming fe tablet (56.5%). Almost of them incomplete of consume Fe tablet (83.5%), and almost all of them agree that forgetting to take Fe tablet as a factor to disobey of consuming Fe Tablet.

WHO data (2017) explains that the prevalence of anemia in 2016 of 33% occurred in women of childbearing age, with around 613 million women aged between 15 and 49 years. The results of Riskesdas (2013) explain the anemia rate of 21.7%, according to the age group the incidence rate in children aged 5-14 years is 26.4% and in children aged 15-24 years is 18.4%. Data shows that 23.9% of women suffer from anemia.

This research is supported by research by Yuniarti, Rusmilawaty, and Tunggal, T. (2015, p34) entitled "The Relationship of Adherence to Taking Fe Tablets with the Incidence of Anemia in Young Women in Ma Darul Imad, Tatah Makmur District, Banjar Regency" explained, adolescents aged 15 to 18 years are a group that is vulnerable to anemia. The main cause of nutritional anemia in adolescent girls is malnutrition.nutrition through diet, while the need for iron in the body and menstruation is relatively high. Above average. Iron loss can occur in young women who are on a diet and have more and longer menstrual periods. Young women are prone to low levels of haemoglobin when not accompanied by a balanced iron intake. Another reason is because young women often maintain their appearance and desire to stay slim or thin by

dieting or eating less. A diet that is not balanced with the body's nutritional needs will cause the body to lack nutrients.(11)

Knowledge is one of the factors that influence individual behavior in using blood supplements, because knowledge is the dominant factor in shaping a person's actions. Knowledge is all information that someone receives from outside and is accompanied by an understanding of the information obtained.(12)

In line with research on the relationship between family support and compliance with Fe tablet consumption at Nanggalo Health Center, Nanggalo District, Padang City in 2015. The results showed that 59.4% of respondents received low family support and 71.9% of respondents had low adherence to Fe tablet consumption. From statistical tests, it can be concluded that there is a relationship between family support and adherence to Fe tablet consumption ( $p < 0.05$ ). For this reason, it is recommended to nurses or other health workers to start inviting and involving family members.(13)

Based on research on the relationship between family support and compliance with the use of Fe tablets at the Nanggalo Health Center, Nanggalo District, Padang City in 2015. The results showed that 59.4% of respondents had low family support and 71.9% of respondents had low adherence in using Fe tablets. From statistical tests, it can be concluded that there is a relationship between family support and adherence to Fe use ( $p < 0.05$ ). For this reason, other medical personnel should start inviting and involving family members.(13)

Consistent with Susanti's (2016) research which concluded that adherence to iron tablet consumption is high after high motivation in school, especially if supplementation is combined with monthly education/teaching sessions. This research is in line with research conducted (14) at SMPN 9 December, most of which received good academic/teacher support of up to 74.4%.

Some of the reasons cited by subjects for not taking supplements include laziness/boredom (29.1%), pill breaking/loss (20.0%), and forgetting (19.4%). The most complaints of subjects after the use of supplements were dizziness (38.8%), nausea / irritability (34.3%), and easy drowsiness (21.1%).(15)

The results of table 2 showed that out of 43 adolescent girls had moderate obedience (43.5%), 34 adolescent girls had (40%) low obedience.

The results showed that people who were obedient to using fe tablets were



mostly poor and non-compliant people, namely 37 adolescent girls (43.5%). In this study, respondents did not routinely take Fe tablets distributed at school every Friday and did not routinely take Fe tablets once a week. Respondents said the reason they did not take Fe tablets was because young women thought they did not need to take Fe tablets because they did not feel any symptoms. Another reason is that teenagers do not take fe pills because they are forgetful, bored, lazy and fe pills smell fishy. Respondents also experienced side effects after taking Fe tablets, namely dizziness, nausea, and drowsiness. These reasons explain why young women do not take Fe tablets regularly.

Obedience is a change in behavior from non-compliant behavior. Adherence problems are an obstacle in giving iron supplements every day, therefore maintaining compliance with iron supplement consumption can be done by taking iron supplements directly witnessed by management representatives, sending short messages to research samples.(16)

The results of table 3 showed that based on data analysis, the relationship between Fe tablet's favor with obedience of consuming Fe tablet conducting coefficient correlation's value was  $(r) -0.255$  and  $p \text{ value} = 0.019 < \alpha = 0,05$ . Thus, there was a relationship between Fe tablet's favor with obedience of consuming Fe tablet ( $r -0.255$ ,  $p 0.019$ ). Then, there was no relationship of Fe tablet t's preferences ( $p 0.927$ ), parent's alert ( $0.325$ ), teacher's alert ( $0.207$ ), inconvenience of taking Fe tablet ( $p 0.623$ ), completed Fe tablet ( $0.547$ ), and forgetting to take Fe tablet ( $0.988$ ) with obedience of consuming Fe tablet because all  $p \text{ value} > \alpha = 0,05$ .

One of the causes of anemia in adolescent girls is at the time of menstruation which can occur between the ages of 10 to 16 years or in early adolescence, the amount of blood flowing during menstruation causes iron loss ranging from 12 to 15 mg per month or equivalent to 0.4 to 10mg mg per month 0.5 mg per day (Retno, 2017). During menstruation, women not only lose iron but also lose basal iron, so that in total women lose 1.25 mg of iron per day. The amount of bleeding per month is about 30 to 50 cc. This condition causes anemia in women. Anemia is characterized by low levels of hemoglobin (Hb) or hematocrit above the threshold value due to low production of red blood cells (erythrocytes) and Hb, increased red blood cell damage, or excessive blood loss.(17)

In accordance with the research of Cahyaningtyas (2017), statistical test results

show that consumption of Fe pellets is effective in increasing hemoglobin levels in adolescent girls of SMA 2 Ngaglik Sleman. This study showed an increase in hemoglobin levels after consuming Fe pellets. The intervention given to respondents by taking Fe tablets is very helpful in overcoming iron anemia. Factors that influence the increase in hemoglobin concentration in adolescent girls are age, menstrual frequency, nutritional status, diet, type of food consumed, consumption of Fe pellets and physical activity.(18)

Researchers assume that the Hb value can be influenced by lack of awareness in consuming Fe tablets or lack of intake of foods containing iron, because more adolescents do not like vegetables and more instant or ready-to-eat foods are consumed.(18)

Another factor that also influences this phenomenon is the lack of family support, because some parents work and pay less attention to their children, so adolescents often forget to take Fe tablets independently. A particularly supportive factor is teacher support and young women's understanding of the importance of taking Fe tablets.(19)

The results of this study are in line with several previous studies, including a literature review conducted by Amir Nelda (2019) analyzing all Indonesian adolescents, showing that there is no significant relationship between knowledge and compliance with Fe pellet consumption. Research conducted by Lestari et al (2015) at SMAN 2 Banguntapan Bantul analyzed data using the Fisher Exact correlation test and stated that there was no relationship between knowledge and compliance Fe consumption in adolescents. The third study was conducted by Risva et al (2016) at Diponegoro University using the chi-square method and obtained  $p$  value = 0.875 and  $P > 0.005$  meaning there is no relationship between knowledge and Fe tablet usage habits.(19)

This research is supported by research by Saptarini and Susilowati (2015) which found that 53.3% did not adhere to taking Fe tablets, 49 respondents reported experiencing more than one complaint after taking Fe tablets. As many as 73.6% of respondents felt nauseous after taking iron tablets. In addition to nausea, 18.9% of respondents complained of an unpleasant smell of iron tablets and 7.5% of respondents complained of dizziness after taking iron tablets. The most common complaint of those surveyed was dizziness due to the metallic smell of iron tablets. Based on the results of

the study showed that there was a relationship between the level of preference for the use of Fe tablets and adherence to taking Fe tablets ( $r -0.255$ ,  $p 0.019$ ).<sup>(20)</sup>

In addition to being influenced by behavioral factors and knowledge, Fe pellet consumption in adolescents is also influenced by the taste of Fe pellets, causing Fe pellet consumption to be unpleasant. The number of foods fortified high in iron is also one of the causes of adolescents absorbing Fe tablets less. This study is in line with the research of Budiarni and Subagio (2012), 48.2% of subjects did not consume TTD because it tasted bad and smelled fishy. Therefore, few subjects appreciated the efficacy of blood supplements and adhered to their consumption (Rahmawati, 2012).

Researchers assume that consumption of vegetables containing iron can also affect Hb values. More growing adolescents prefer vegetables and tend to eat instant foods and junk food to increase blood after menstruation.

Researchers also assume that the existence of this association may be influenced by adolescent adherence to taking Fe tablets. If adolescents consume Fe tablets regularly, Hb levels will also increase. Meanwhile, if adolescent compliance is lacking in consuming Fe tablets, the Hb value will decrease. If Fe can be combined with the taste of food or drinks that young women tend to like, the better the level of adherence of young women in consuming Fe ablet will result in an increase in Hb value.

### **Limitation**

Some limitations of this study include external variables that affect Fe pellet consumption are not well controlled by researchers, such as the reason survey participants use Fe pellets, and parental roles, cognition, interests, emotional/psychological habits, body image, availability of Fe tablets, personal and socioeconomic experiences. But researchers hope that with adequate knowledge, consumption of Fe tablets during menstruation in adolescent girls can be increased.

### **Conclusion**

The most research subject was in moderate obedience (43.5%). There was a relationship between Fe tablet's favor with obedience of consuming Fe tablet ( $r -0.255$ ,  $p 0.019$ ). There was no relationship of Fe tablet t's preferences ( $p 0.927$ ), parent's alert (0.325), teacher's alert (0.207), inconvenience of taking Fe tablet ( $p 0.623$ ), completed

Fe tablet (0.547), and forgetting to take Fe tablet with obedience of consuming Fe tablet (0.988). Suggestions for education institution is to optimize the socialization about the risk of anemia and the urgency of consuming Fe tablet. Thus, for student can increase the obedience of consuming Fe tablet regularly especially for adolescent girls in SMAN 1 Bojongsoang.

### **Ethical Considerations**

Please describe the ethical issues in the study, including how informed consent was obtained from respondents/participants. Provide a statement of approval from the health research ethics committee, including its reference number.

Request new consent when there are indications of undesirable events during the study (which did not previously exist). Researchers should be neutral to new findings, not give opinions about their findings and leave it to experts. The researcher keeps the findings confidential, if forced then the researcher opens the secret after explaining to the subject about the necessity of the researcher to keep the secret and how much the researcher has violated this principle, by revealing the secret. There is an IC Sheet with explanation (PSP) that will be submitted to participants. There is an explanation of the process of obtaining consent, using appropriate procedures (feasibility of obtaining subject consent). Data confidentiality guarantee, the subject understands that the subject's data is kept confidential, unsolicited, and applies to all subjects. The element of coercion is present or not, how do researchers explain that participation in this study is not coercive, there is no coercion.

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### **Conflict of Interest**

The author declares that there is no conflict of interest regarding the publication of this article. All authors have disclosed financial or personal relationships with individuals or organizations that could potentially influence the research presented in this work. In addition, there are no competing financial interests that may influence the interpretation or presentation of the findings.

Sri Lestari, Intan Yusita, alyxia Gita Stellata stated that there is no other potential conflict of interest, including but not limited to patent ownership, consulting agreements, or other situations that can cause conflicts. If a new conflict of interest arises or becomes apparent after the publication of this article, the author commits to promptly update this disclosure.

### **Author contribution**

In addition, there are no competing financial interests that may influence the interpretation or presentation of the findings. If applicable, the following disclosures are made:

Financial interests or affiliations:

Sri Lestari provides personal funds. And, this funding has an influence on the design, implementation, or reporting of research.

Work:

Sri Lestari, Intan Yusita, Alyxia Gita Stellata as authors on the research presented in this article is conducted independently of external influences, and the author maintains full control over the research process and its results.

Sri Lestari and Hasna Shafa Huwaida as data miner

Alyxia Gita Stellata as a data analyst expert

Sri Lestari, Intan Yusita, Alyxia Gita Stellata as an editor

Personal relationships:

The authors Sri Lestari, Intan Yusita, alyxia Gita Stellata have personal relationships

that can influence the work presented in this article.

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