

# Obedience of iron tablet consumption reduces risk of anemia among Indonesian female adolescents

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## ABSTRACT

Female adolescents have more risks to experience anemia when they have prolonged menstruation, frequent consuming tea, have inadequate iron consumption, have menstrual disorders. The purpose of this research was to investigate the relationship of iron tablet consumption obedience with the incidence of anemia among female adolescents in Yogyakarta, Indonesia. This research used cross sectional study. Sampling techniques was using random sampling. Analysis method with Chi square test. The results showed that majority of female adolescents were lack of obedient in consuming iron tablets of 47%. The number of female adolescents were suffered from anemia i.e. 59%. It can be concluded that there was a correlation between the consumption obedience of iron tablets and the incidence of anemia in female adolescents with P value 0.000.

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## 1. Introduction

The World Health Organization (WHO) reported that 30% of people around the world are suffering from anemia during pregnancy and adolescence age. There is also stated that anemia amongst adolescents is still high i.e. 29% in 2014 (WHO, 2016). The prevalence of anemia in Indonesia was 21.7%, and the incidence of anemia at the age of 5-14 and 15-24 was 26.4% and 18.4%, respectively. When anemia occurred among females, it has more issues when it occurred among men, because within their life women experienced menstruation, pregnancy and childbirth.

Anemia is a condition when red blood cells or hemoglobin concentration below the normal limit value that resulted in disruption of blood capacity to transport oxygen throughout the body (Coad & Conlon, 2011). Normal Hb levels in female adolescents is  $\geq 12$  g/dL. There is fact that anemia more frequently occurred among female adolescents due to misunderstanding of body image. Female adolescents were wanting to be slim and beautiful therefore they manage their nutrition input. However, they are often have limited knowledge of appropriate diet management resulting anemia (Elhassan, Abbaker, Haggaz, Abubaker, & Adam, 2010).

As response on that issues Indonesian Government put efforts on making programme strategies to combat anemia among adolescents such as providing iron tablet for female adolescents freely, promoting healthy diet, provision of financial and infrastructure for campaign reducing anemia and education adolescents of dangers when anemia occurred in order to increase adolescents' awareness (Kemenkes, 2018). However, there is also fact that adolescents were not punctual to consume iron tablets due to the taste and also lack of awareness for performing healthy life style (Regasa & Haidar,

2019). Therefore, this research aimed to investigate the relationship of iron tablet consumption obedience with the incidence of anemia among female adolescents in Yogyakarta, Indonesia.

## 2. Method

This was quantitative research and it applied an analytical research correlation with cross sectional approaches (Bruce, Pope, & Stanistreet, 2008). The population in this study was the female adolescents in the a public schools within Yogyakarta province. There were 105 students were involved within the study. The sampling techniques in this study used random sampling, and only those met with inclusion criteria were recruited. Questionnaires were distributed to participants for data collection. Informed consents were provided and signed before data collection from their parents. Data analysis using Chi-square test and SPSS was used as data analysis software. Ethical approval from Research Ethic Committee Board of Universitas 'Aisyiyah Yogyakarta was obtained before data collection conducted with Ref No 1026/KEP-UNISA/IV/2019.

## 3. Results and Discussion

Table 1 describes the frequency of iron table distribution consumption. It shows that the highest frequency is among respondents who are not obedient in consuming iron tablets i.e. 24 people or 47.1%, while the lowest frequency is respondents who are obedient to consume iron tablets i.e. 11 people or 21.6%.

**Table 1.** Frequency Distribution Iron Tablet consumption

Fe Tablet Consumption Compliance	Frequency	%
Obey	11	21,6
Less obedient	16	31,4
Disobedient	24	47,1
<b>Total</b>	<b>51</b>	<b>100</b>

Table 2 illustrates the frequency of anemia distribution. It reveals that the highest frequency in respondents were 30 people or 58.8%, while the frequency of respondents did not anemia as much as 21 people or 41.2%.

**Table 2.** Frequency Distribution of Anemia

Anemia Occurrence	Frequency	%
Not anemia	21	41,2
Anemia	30	58,8
<b>Total</b>	<b>51</b>	<b>100</b>

The relationship between iron tablet consumption and the incidence of anemia in female adolescents is described in table 3.

**Table 3.** The relationship between Iron tablet consumption and the incidence of anemia

Iron Tablet Consumption Compliance	Anemia Incidence				Total		P value
	Not Anemia	%	Anemia	%	N	%	
Obey	11	21,6	0	0,0	11	21,6	0,000
Less obedient	5	9,8	11	21,6	16	31,4	
Disobedient	5	9,8	19	37,3	24	47,1	
<b>Total</b>	<b>21</b>	<b>100</b>	<b>30</b>	<b>100</b>	<b>51</b>	<b>100</b>	

Table 3 shows the female adolescents who are obedient to consume Fe tablets with no anemia of 11 people (21.6%), and all the obedient adolescents do not suffer from anemia, which is less obedient and not anemia as much as 5 people (9.8%). While the less obedient with anemia as much as 11 people or 21.6%, and the respondent who did not comply with anemia as much as 5 people (9.8%), and the disobedient and anemia as much as 19 people (37.3%).

Based on the table 3 shows the results of a statistical test of the Chi square with asymp value. A Sig. (2-sided) of 0.000 so that p value of  $< 0.05$  means there is a compliance connection of iron tablets consumption with anemia incidence in adolescent girls. Based on the value of the correlation coefficient is 0.574 indicating that the relationship strength is moderate.

### 3.1. Iron Tablet Consumption Obidience

The results showed that the respondents who adherently consumed the iron tablets were as much as 11 people (21.6%). Obidience of consuming iron tables was correlated with knowledge of female adolescents to consume iron tablets, support from the school and support from their older counterparts on the ways to consume iron tablet. It is in line with another research that the factor affecting the consumption obidience of iron tablets is the observance of adolescent women carrying out the recommendation of health officers to consume iron tablets (Roche et al., 2018). Such compliance can be measured from the accuracy of the number of tablets consumed, the accuracy of consuming Fe tablets, frequency and consuming time (Widjaja, Widjaja, Santoso, Wonggokusuma, & Oktaviati, 2014).

Other aspects that cause respondents to be categorized disobedient ie because the frequency of consuming the irregular iron tablets as much as (71%), and does not consume iron tablets 6 grams during the last 6 weeks (78%). Some respondents complained of nausea and bad stomach and black stools after drinking iron tablets. The impact of consuming iron tablets can cause unpleasant side effects including nausea, vomiting, unpleasant stomach, hard bowel movements, and black stools (Deshpande, Karva, Agarkhedkar, & Deshpande, 2013). Regulation of the Kemenkes RI No. 88 year 2014 on the guidelines for the prevention of nutritional anemia for female adolescents and women of childbearing age, for adolescents the rules of consuming iron tablets is 1 week as much as 1 tablet.

It is known that 51.8% of respondents experienced a side effect of nausea resulting in non-compliance (Nelima, 2015). The cause of other non-compliance is due to constipation and discoloration of feces black (Steele, Kroeun, & Karakochuk, 2019). Another reason that is revealed from 48.2% of respondents is that the Fe tablets have unpleasant taste and fishy smell, otherwise the subject also feel bored, forgotten and lazy to consume the iron tablets. Monitoring and evaluation of the iron tablet program to the female adolescents who have not been maximized in school. Some factors that cause disobedient consumption of Fe tablets include a lack of awareness of young women to consume Fe tablets and lack of support from outside parties such as the role of teachers in schools and parents. Compliance will occur when the rules for taking the drug are followed correctly. In addition, compliance desperately needs support in order to become habit.

### 3.2. Incidence of Anemia in female adolescents

Based on the results the study showed that most of the teenagers had anemia, which was 30 people (58.8%) And that did not suffer from anemia as much as 21 people (41.2%). The most common Anemia in schoolchildren and adolescents is due to iron deficiency (Fe). This condition is very high risk with the reproductive health of women not only in the current condition but also as a preparing for pregnancy, childbirth, puerperium and breastfeeding (Asni & Dwihestie, 2018).

Literature shows that iron needs increased in adolescents in the period of growth requires an iron as much as 0.5-1 mg/day (Moschonis et al., 2013). Female adolescents need the iron tablets to meet menstrual iron loss as well as the need to increase hemoglobin and tissue time for growth (Ferrari et al., 2011).

### 3.3. The relationship between Iron Tablets consumption compliance and incidence of Anemia among female adolescents

Compliance in consuming one iron tablet in one week can increase the level of adolescent hemoglobin. Adherence to consuming iron on a weekly basis can result in the same increase in hemoglobin level by consuming daily iron tablets supplements (Steele et al., 2019). Risk factors such as anemia are prolonged menstruation, low consumption of iron, tea habits, abnormal menstrual cycles, nutritional status less, do not get iron intake well. Incidence of anemia among adolescents can be prevented by adherent to consuming iron tablets according to the rules, and supported by the fulfillment of nutrients derived from food consumed.

#### 4. Conclusion

Obidience to consume iron tablets among female adolescents in the disobedient category is 47% and the incidence of anemia in female adolescent is 58%. There is a correaltion between the iron tablet consumption obidience with the incidence of anemia in female adolescents with p value 0.00 with a value of the coeficient Contingancy of 0.574 indicating moderate relationship level.

#### 5. Recommendation

For young women to increase obedience in consuming the iron tablets according to the rules, and to consume nutritious food such as meat, fish, chicken, vegetables, nuts, tempeh, and avoid drinks that inhibit the absorption of iron such as tea, coffee and milk while drinking iron tablets.

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