



## Factors Affecting Anemia Status in Adolescent Girls

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### Abstract

**Background:** According to Riskesdas 2018, the prevalence of anemia in adolescent girls is very high, at 84.5%. Data from the City of Mataram Health Department in 2017 Puskesmas Selaparang the highest prevalence was 50.43%. Based on the Hb level screening conducted by the Selaparang Health Center, the highest number of anemia in SMAN 9 Mataram was 63 students. The impact of anemia in adolescents, namely decreased reproductive health, decreased learning rates, a height that has not been achieved maximally decreased motor development, and inhibited brain intelligence. Anemia during adolescence will be very influential during pregnancy, childbirth, prematurity, and low birth weight. The purpose of this study was to determine the relationship between parents' income factors, maternal education, tea-drinking habits, knowledge, attitudes, iron supplement intake, menstrual conditions, and the incidence of anemia in adolescent girls at SMAN 9 Mataram in 2018.

**Method:** This research is a quantitative study with a cross approach sectional. The sampling technique was nonprobability sampling, namely total sampling and a total sample of 63 people who were identified as anemic in 2018. Data analysis used the chi-square test.

**Results:** Based on the results of statistical analysis, there was a relationship between parents' income ( $p = 0.004$ ), maternal education ( $p = 0.000$ ), knowledge ( $p = 0.000$ ), consumption of iron supplements ( $p = 0.008$ ), and menstrual conditions ( $p = 0.004$ ). ) with the incidence of anemia in adolescent girls at SMAN 9 Mataram in 2018, and there is no relationship between the habit of consuming tea ( $p = 0.753$ ) and attitudes ( $0.323$ ) with the incidence of anemia in adolescent girls at Mataram Senior High School in 2018.

**Conclusion:** Based on the research results, suggestions that can be suggested that the Mataram City Health Office collaborate with the Puskesmas in evaluating the program's implementation should immediately follow up.

### How to Cited

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## INTRODUCTION

Adolescents are the most prominent investors and the next generation of the nation's ideals. However, at the age of adolescence, many problems can adversely affect health, such as adolescent nutrition. The quality and quantity of nutritional intake eaten during adolescence are a significant factor in the emergence of adolescents' nutritional problems (Kemenkes RI, 2014).

WHO provisions regarding anemia are below <12 gr/dl for women and <14 gr/dl (Aulia et al., 2017). One of Indonesia's health problems is anemia that has not been resolved and is one of the health problems that continues to be the government's concern and even the world. According to WHO, the world's population suffering from anemia around 2.3 billion. The cause is iron deficiency anemia by 50% (World Health Organization, 2017). The highest anemia cases were in Southeast Asia and Africa, around 85%, while Indonesia was about 22.7% (Lestari et al., 2018). Anemia in adolescents can cause a decrease in work productivity, concentration levels in learning and disrupt health. The impact of anemia in adolescents, were decreased reproductive health, decreased learning rates, a height that has not been maximized, reduced motor development, and inhibited brain intelligence (Sari et al., 2016)

Anemia in adolescents will significantly affect pregnancy, childbirth, and maternal risks due to postpartum bleeding, prematurity, and low birth weight (Sari et al., 2019)

According to Primary Health Survey (Riskesdas) 2018 data, the prevalence of anemia in adolescent girls aged 15-24 years was 84.5%. Based on the Mataram City Health Office data, the number of anemia cases in adolescent girls in 2017 was 963 people with a prevalence of 23.18%, not yet reaching the 2017 national target, which was 20.36% (Kemenkes RI, 2019). Based on Health Office's data, the highest city of Mataram was in the area of Selaparang Primary Health Care Centre with a prevalence of 50.43%, and those who were not anemic were 49.57%. Based on a preliminary study conducted by researchers using an anemia survey for female adolescents obtained by researchers from health workers at the Selaparang Primary Health Care Centre on December 11, 2018, the highest was

at SMAN 9 Mataram, as many as 63 students.

Anemia during childhood has been linked to growth delay, high risk of infections, and poor cognitive and motor development, which may lead to loss of work productivity later in life. In fact, anemia is among the top leading causes of disability-adjusted life years lost among adolescents. (Al-Taiar et al., 2018).

The leading cause of anemia is iron deficiency. Other causes include insufficient nutritional intake and iron breakfast, frequent consumption of tea at the same time at mealtimes, lack of knowledge about anemia, menstruation, iron supplement intake, socioeconomic level, and family education (Listiana, 2016).

Balci et al., (2012) reported that 59% of anemic incidences are caused by iron deficiency and 41% are the combination of iron and B12 vitamin deficiency

Adolescent girls who have prolonged menstruation can cause blood to come out more than usual, which results in anemia. (Fajriyah & Fitriyanto, 2016). Young women mostly want to slim down to maintain their appearance, so they go on a strict diet by reducing food intake.

According to Masthalina (2015), in her research that drinking tea causes anemia in young women of MAN Al-Aziziyah Gunung Sari. Tea contains tannins and oxalates, which are one of the inhibiting factors (inhibitor) of iron. Socio-economic conditions greatly influence a person's purchasing power in meeting food needs. People who have higher income can buy sufficient quantities of foodstuffs with excellent quality than people with less income. (Zulaekah et al., 2017).

The government has taken various strategic actions. One of them deals with anemia in adolescents, namely supporting the 1000 HPK movement by providing iron supplements in iron and folic acid. Based on (Riskesdas, 2018), young women who received Blood Booster Tablets (Tablet Tambah Darah) at school were 80.9%, while those who did not were 19.1%

## METHOD

This research type was a quantitative study using a cross-sectional design conducted

in March 2019 at SMAN 9 Mataram. The sampling technique used a total sampling of 63 respondents, namely female students of SMAN 9 Mataram who were diagnosed with anemia from Selaparang Primary Health Care Centre with inclusion and exclusion criteria. However, when the research was found, one student dropped out, so the sample became 62. The inclusion criteria were students of class X, XI, XII of SMAN 9 Mataram diagnosed with anemia from the Selaparang Primary Health Care Centre, students present, and cooperative students. Exclusion criteria, namely not being willing to be research subjects and students who have dropped out. The variables studied were parents' income, mother's education, tea consumption habits, knowledge of anemia,

attitudes, consumption of iron supplements, menstrual conditions, and the incidence of anemia. The instrument used was the parents' income factor questionnaire using the regional minimum wage (UMR) standard, the mother's education factor questionnaire, the tea consuming habit factor questionnaire, the knowledge factor questionnaire (20 questions), the attitude factor questionnaire (20 questions), the iron supplement consumption factor questionnaire (6 questions). Questionnaire menstrual state factors. Data analysis used univariate and bivariate, namely by using the chi-square test and 95% confidence level. This research has received permission from the Research Ethics Commission of Stikes Yarsi Mataram No. 04 / KEP / STIKES / III / 2019.

Table 1. Relationship between parent's income, mother's education, consumption habits, knowledge, attitudes, habits of consuming iron supplements, and menstrual conditions with the incidence of anemia in adolescent girls at SMA Negeri 9 Mataram in 2018

Variable	Anemia						Total	P	
	Mild		Moderate		Severe				
	N	%	N	%	N	%			
<b>Parents' income</b>									
High	9	14.5	11	17.7	1	1.6	21	33.9	0.004
Low	34	54.8	7	11.3	0	0	41	66.1	
Total	43	69.4	18	29.0	1	1.6	62	100.0	
<b>Mother's education</b>									
Low	2	3.23	0	0	1	1.6	3	4.8	0,000
Intermediate	11	17.7	4	6.5	0	0	15	24.2	
On	26	41.9	4	6.5	0	0	30	48.4	
High	4	6.5	10	16.0	0	0	14	22.6	
Total	43	69.4	18	29.0	1	1.6	62	100.0	
<b>The habit of consuming tea</b>									
Good	31	50.0	14	22.6	1	1.6	46	74.2	0.753
Bad	12	19.4	4	6.5	0	0	16	25.8	
Total	43	69.4	18	29.0	1	1.6	62	100.0	
<b>Knowledge</b>									
Not good	22	35.5	7	11.3	0	0	29	46.8	0,000
Pretty good	20	32.3	10	16.1	0	0	30	48.4	
Good	1	1.6	1	1.6	1	1.6	3	4.8	
Total	43	69.4	18	29.0	1	1.6	62	100.0	
<b>Attitude</b>									
Good	16	25.8	9	14.5	1	1.6	26	41.9	0.323
Bad	27	43.6	9	14.5	0	0	36	58.1	
Total	43	69.4	18	29.0	1	1.6	62	100.0	
<b>Habit of Consuming Iron Supplements</b>									
Not obey	39	62.9	17	27.4	0	0	56	90.32	0.008
Obey	4	6.5	1	1.6	1	1.6	6	9.68	
Total	43	69.4	18	29.0	1	1.6	62	100.0	
<b>Menstrual state</b>									
Abnormal	28	45.2	18	29.0	0	0	46	74.2	0.004
Normal	15	24.2	0	0	1	1.6	16	25.8	
Total	43	69.4	18	29.0	1	1.6	62	100.0	

Based on the table above, a association analysis can be concluded as follows:

- a. The highest incidence of mild anemia in adolescents with low parental income was 34 people (54, 8 %). With a sig p-value of 0.004 with  $\alpha = 0.05$ , it means that there was a significant association ( $p < 0.05$ ).
- b. The highest incidence of mild anemia in adolescents with upper-level maternal education was 26 people (41, 9 %). With a sig p-value of 0.000 with  $\alpha = 0.05$ , it means that there was a significant association ( $p < 0.05$ ).
- c. The highest incidence of mild anemia in adolescents with good tea consumption habits was 31 people (50, 0 %). With a sig p-value of 0.753 with  $\alpha = 0.05$ , it means that there was no significant association ( $p > 0.05$ ).
- d. The highest incidence of mild anemia in adolescents with poor knowledge was 22 people (35, 5 %). With a sig p-value of 0.000 with  $\alpha = 0.05$ , it means that there was a significant association ( $p < 0.05$ ).
- e. The highest incidence of mild anemia in adolescents with a bad attitude was 27 people (43, 6 %). With a sig p-value of 0.323 with  $\alpha = 0.05$ , it means that there was no significant association ( $p > 0.05$ ).
- f. The highest incidence of mild anemia in adolescents with consuming iron supplements that are not adherent is 39 people (62, 9 %). With a sig p-value of 0.008 with  $\alpha = 0.05$ , it means that there was a significant association ( $p < 0.05$ ).
- g. The highest incidence of mild anemia in adolescents with abnormal menstrual conditions was 28 people (45, 2 %). With a sig p-value of 0.004 with  $\alpha = 0.05$ , it means that there was a significant association ( $p < 0.05$ ).

## DISCUSSION

### Parents' income factor

If a person has sufficient income, he can provide the facilities or other facilities that he wants according to his needs (Notoatmodjo, 2012). This can affect the fulfillment of nutritional intakes such as iron needs and the

procurement of various foods.

This research was in line with the research (Listiana, 2016) that families of young women with less income are at risk of developing anemia than families with more income. These findings were concordant with other similar studies. A notable relationship between anemia and socioeconomic status strongly recommends the need for developing and implementing policies that improve and eliminate socioeconomic disparities (Zenki et al., 2015). So it can be concluded that respondents with insufficient family income are not enough to buy a variety of foods that contain iron. Parents' income will affect a person's ability to meet all needs, especially nutritious food, rich in iron and various kinds.

### Mother's education factor

Mothers who have higher education will pay more attention to their children's diet because their mothers know the nutritional intake their children need. The higher a person's education, the better parents will educate and care for their children (Notoatmodjo, 2014).

The results of this study were supported by research from (Basith et al., 2017) and research from (Listiana, 2016), mother's education has an association with the incidence of anemia in adolescent girls. In this study, the mother's education with high school had mild anemia status, and the low category of mother's education had severe anemia. Hence, it is evident that mother education plays a vital role in compiling various nutritious foods and child care.

Supported by the results of (Silalahi et al., 2016), research shows that low nutritional intake was because food availability does not change due to parental education and family income.

### The Habit of Consuming Tea

According to Proverawati (2011), consuming tea approximately 1 hour before or after meals can reduce the absorption of blood cells to iron by about 64% (Proverawati, 2011)

This study's results follow research conducted by (Akib & Sumarmi, 2017) and (Kalsum & Halim, 2016). When the

measurement was done, it is possible to experience events that are different from their habits.

According to researchers, respondents like to consume tea simultaneously as eating, but not do it every day and do not make it a habit, only pleasure and good tea.

### **The knowledge factor**

According to (Listiana, 2016) young women with less knowledge have a risk of developing anemia than adolescents with acceptable knowledge levels. The study results concluded that the lack of knowledge about anemia, signs and symptoms, complications, and prevention could cause adolescents to consume foods that contain not much iron so that the iron needed is not fulfilled. To overcome this, namely in the form of counseling to young women about anemia

### **Attitude Factor**

According to Panyuluh et al.(2018),if someone already has an excellent attitude to prevent anemia, the results will be maximized if supported by health service facilities, sufficient health information, and adequate social support. Besides that based on (Aulia Putri, 2018), attitude is not a direct factor in hemoglobin levels. Although the adolescent's attitude is good, if the environment is not supportive of other anemia prevention measures, it is not certain that anemia will be avoided.

### **Factors for consuming iron supplement intake**

In adolescents, the need for iron increases from the time before adolescence of 0.7-0.9 mg Fe/day to 2.2 mg Fe/day. When menstruation is heavy, the need for iron increases, the iron needs of adolescents are 26 mg/day.(Agustina, 2016).

The theory and research support the results of the study conducted by Listiana (2016). When menstruating, adolescents who habitually consume iron tablets can reduce anemia, even though their menstrual cycles are not regular. And vice versa if you do not swallow iron tablets regularly, and irregular menstruation cycles can aggravate the anemia suffered.

Dietary habits that do not have sufficient iron sources required and demanded by the growing physiques of the adolescents – The requirement is 1.37 mg to 1.88 mg for adolescent boys and 1.40 mg to 3.27 mg for adolescent girls (Dambal & Panneerselvam, 2018).

Researchers concluded that adherence to consuming iron supplements during menstruation was essential, especially if the menstrual pattern is irregular and aggravates the anemia. Adolescent girls need to take iron supplements because they need iron to substitute for blood loss during menstruation.

### **Menstrual state factors**

At the age of puberty, young women will experience bleeding every month called menstruation (Yunarsih & Antono, 2017). Menstrual patterns experienced by adolescents are generally not regular. It allows teenagers to experience excessive bleeding during menstruation and blood donors who are not balanced with good nutrition are at risk of developing anemia in adolescents (Soebroto in Irianti, 2019).

The amount of blood lost during one menstrual period is between 20-25 cc, and this amount is equivalent to the iron loss of 12.5-15 mg/month or 0.4-0.5 mg/day(Agustina, 2016).

Adolescent girls who have abnormal menstrual patterns are at risk of 3,743 times of experiencing anemia compared to young women with normal menstrual patterns(Agustina, 2016).

According to Rupali et al (2015), the relationship between menstrual patterns and anemia in Indian adolescents, with the prevalence of anemia, is 90.83%. Significantly more adolescents with anemia have irregular menstrual cycles, dysmenorrhoea, and premenstrual syndrome. (Rupali et al., 2015)

According to (Kristiani et al., 2014) 's research results, there was an association between anemia and the menstrual cycle. The chi-square statistical test results show the  $\alpha$  value of 5.625, a significant level of  $p = 0.018$ .

This research is supported by research by Basith et al. (2017) and Agustina (2016). In general, women have a regular menstrual cycle, which is once a month, but some experience more than once a month in some women. The



blood that came out was unusual than usual, which was more than five pads per day.

## CONCLUSION

Based on the research results above, it can be concluded that there was an association between parents income, mother's education, knowledge, consumption of iron supplements, and menstrual conditions with the incidence of anemia in adolescent girls. There was no association between tea consumption habits and attitudes regarding anemia in adolescent girls at Mataram State High School in 2018.

## SUGGESTION

It is suggested to the Mataram City Health Office, in collaboration with the Primary Health Care Centre in evaluating the implementation of programs such as regular consumption of blood booster tablets and immediate follow up

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