

Hemoglobin Levels of Female Students Based On Fe Consumption and Breakfast Habits

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Background : Breakfast is the most important activity in fulfilling energy consumption and nutritional needs in a day, but there are still many adolescents who skip this habit. This problem causes reduced iron in the blood which results in anemia. This study aims to analyze Hb levels in female students based on Fe consumption and breakfast habit. **Method** : This study used a descriptive analysis with 253 females as the respondents. The data was collected from March - July 2019. As much as 72 data respondents were analyzed by using simple random sampling technique. This study measured Hb and used a checklist tool to determine HB levels based on consumption and breakfast habits. **Results** : The results from 72 respondents showed that almost 63 people (87%) have Hb content ≥ 12 g / dL, 47 people (65%) consumed Fe, and also 45 people (62%) have breakfast habits. In conclusion, most of 47 girls (65%) consumed Fe with an hb level of ≥ 12 g / dL, 45 people (62%) had the habit of having breakfast with Hb levels ≥ 12 gr / dL. **Conclusion** : The school and Public Health Center need to work together in dealing with female students who have low Hb levels. The role of parents is also important in fostering the students to consume iron and have breakfast habit.

I. Introduction

During adolescence, changes occur both physically and psychologically. Physical changes in adolescents will affect the health and nutritional status of adolescents themselves. One of the important areas in adolescents is adolescent reproductive health. A balanced intake of nutrients in accordance with the needs of adolescents will help adolescents achieve optimal growth and development. (Dewi, 2014).

Teenage girls in Indonesia and around the world are the main resources for the sustainable development agenda 2030. The number of young women in Indonesia, according to the 2010 Population Census, is 21,489,600 or 18.11% of the total number of women. According to the Indonesian Population Projection (BAPPENAS, BPS, and UNFPA 2013) teenage girls will be 22,481,900 or 14.72% of the total number of women.(BKKBN, 2016).

To achieve an optimal level of health, a balanced intake of nutrients from a variety of foods and beverages is required. Teenage maa requires a lot of nutrients. Nutritional problems in adolescents lead to deficiency diseases. This condition can have a negative impact on decreased immunity, concentration, learning achievement, adolescent fitness and productivity. (Dewi, 2014)

One of the factors that can cause the intake of macronutrients and micronutrients to be below the minimum requirements is improper diet behavior that is often done by young girls in order to maintain their appearance and physical characteristics. (Foo et al. 2004).

A diet that is too strict, including skipping breakfast, is often done by young women to get a slimmer body shape. Young women skip breakfast more often than any other meal. An observational study in Belgium of 341 adolescents aged 13-18 years showed that 16.9% of girls and 13.2% of boys often skip breakfast. (Matthys et al., 2007)



Breakfast is the consumption of staple foods and side dishes that are carried out from waking up in the morning until 10 am to meet 20-25 percent of the total energy needs in a day which aims to meet the nutritional needs in the morning. (Prime, 2013)

Teens who skip breakfast tend not to be able to replace lost energy and nutrients at other meal times, so breakfast is an important meal time for adolescents to meet their daily nutritional needs. (Rampersaud et al. 2005).

Lack of nutrient intake can cause disturbances in neurotransmitters which will directly affect the concentration of learning because the energy and precursors needed are not fulfilled. (Muller et al. 2008)

Anemia is a medical condition in which the hemoglobin level is less than normal. Normal Hb levels in adolescent girls are > 12 g / dl. Adolescent girls are said to be anemic if their Hb levels are < 12 g / dL. Adolescence is the age stage that comes after childhood ends, marked by rapid physical growth. In general, anemia is more common in women and girls than men, what is very unfortunate is that most sufferers do not know or are not aware of it, even when they know they still consider anemia a trivial problem. (Irianto, 2015)

According to the World Health Organization (WHO), anemia in adolescent girls is still quite high. The prevalence of anemia in the world ranges from 40-88%. According to WHO, the incidence of anemia in adolescent girls in developing countries is about 53.7% of all young women. Anemia often affects young women due to stress, menstruation, or late meals. (WHO, 2013)

The rate of iron nutrition anemia in Indonesia is 72.3%. Lack of iron in adolescents results in pallor, weakness, fatigue, dizziness, and decreased learning concentration. The causes, among others: education level of parents, economic level, level of knowledge about anemia from young women, consumption of Fe, Vitamin C, and the length of menstruation. The total population of adolescents (10-19 years) in Indonesia is 26.2% consisting of 50.9% male and 49.1% female (Kemenkes RI, 2014).

Based on the results of Riskesdas 2013, the prevalence of anemia in Indonesia is 21.7% with anemia sufferers aged 5-14 years of 26.4% and 18.4% of patients aged 15-24 years (Indonesian Ministry of Health, 2013).

Household Health Survey (SKRT) data in 2014 states that the prevalence of anemia for adolescent girls aged 10-18 years is 57.1% and those aged 19-45 years are 39.5%. Women have the highest risk of developing anemia, especially in young women (Kemenkes RI, 2014).

Anemia in adolescent girls aged 13-19 years in West Java, there is a prevalence of anemia incidence of 51.7% (Health Profile, 2016). Anemia in adolescent girls in Bandung Regency is still a major public health problem, this is due to its prevalence of 12.9 percent. Based on Riskesdas (Basic Health Research) in 2013, the incidence of anemia in adolescent girls over 15 years reached 22.7% with low anemia status. As many as 500 girls.

In October, 500 young women had their hemoglobin (HB) checked, and 62 people or 13.2% had moderate anemia. This means that serious efforts are needed to reduce anemia in women, especially young women (Bandung Regency Health Office, 2018).

Anemia is a continuation of the impact of lack of macro nutrients (carbohydrates, protein, fat) and lack of micro-substances (vitamins and minerals). The impact of anemia on adolescent girls is stunted growth, the body during growth is easily infected, resulting in reduced fitness / freshness, decreased enthusiasm for learning / achievement, at the time of becoming a prospective mother, she will become a pregnant woman who is at risk including bleeding during childbirth. causing maternal death (Dewi, 2014).

There are several efforts that can be made to prevent and overcome anemia due to iron deficiency. The first attempt is to increase iron consumption from natural sources through education or nutrition education to the community, especially foods that are easily absorbed animal sources, as well as foods that contain lots of vitamin C and vitamins. A to help iron absorption and help the process of hemoglobin formation. Second, fortification of food ingredients, namely adding iron, folic acid, vitamin A, and essential amino acids to food ingredients that are widely eaten by the target group. Third, carry out iron folate supplementation routinely to anemia sufferers for a certain period of time to increase the patient's hemoglobin levels quickly (Depkes, 1996).

One way for the government to reduce the incidence of anemia, especially in young women, is by providing blood booster tablets. This activity is an implementation of the Minister of Health Regulation No. 88/2014 concerning the standard of blood-added tablet for women of childbearing age and pregnant women as well as a circular letter from the Director General of Public Health of the Ministry of Health of the Republic of Indonesia Number HK.03.03 / V / 0595/2016 concerning the provision of blood supplement tablets. This effort is carried out as a government effort to build human resources through the fulfillment of balanced nutrition for adolescents. The government's target as outlined in the Ministry of Health's strategic plan for 2015-2019 is the percentage of young women who receive blood supplement tablets in 2019 by 30% (Ministry of Health, 2015).

The role of the government in preventing anemia in adolescent girls, namely, the Community Nutrition Development and Service Section at the Health Office carries out the dissemination of anemia prevention by giving added tablets to young girls in SMP / SMA. The socialization meeting and strengthening the role of the school focused on exposure to what anemia is, causes, prevention, dangers, and the technicality of giving blood supplemented tablets to female teenage girls so that the coverage of their administration will increase from the previous 2 years. After this socialization, it is hoped that the school can socialize this program to these students (MOH, 2013).

Furthermore, the Puskesmas will carry out monitoring related to giving blood added tablets to female students in each school which is carried out and supervised by school teachers / class teachers with a frequency of giving once a week. After that, students are expected to return home immediately to avoid feeling nauseous due to drinking iron tablets. (Blood Adding Tablets) (MOH, 2013).

The health center has conducted cross-program socialization by nutrition officers to junior high school students and socialization to teachers to distribute blood supplement tablets to schools. And carry out monitoring related to giving blood added tablets to female students in each school which is carried out and supervised by teachers / class teachers with a frequency of giving once every 2 weeks before returning from school and being aware of the results of the PKM Ibum evaluation, apparently there are still many students who do not consumed for fear of poisoning.

Based on the results of the preliminary study, the results of interviews with 10 female adolescents at SMPN 2 Ibum, it turns out that the most young women do not consume Fe and do not do breakfast habits so that many young women experience symptoms of weakness, fatigue, lethargy, fatigue, and weakness. often do not study concentration.

Based on the data above, the researcher is interested in conducting research with the title "Description of Hemoglobin Levels in Young Girls Based on Fe Consumption and Breakfast Habits at SMPN X Kab. Bandung".

II. Method

In this study, descriptive research was carried out on a set of objects which usually aims to see a picture of the phenomenon (including health) that occurs in a certain population. (Notoatmodjo, 2018) This study describes the description of hemoglobin levels in young women based on iron consumption and breakfast habits at SMPN X Bandung Regency.

The population target in this study were junior high school students (young women) who were in school X Kab. Bandung. Adolescent girls who have met the inclusion criteria are willing to fill in informed consent, are not currently taking supplements and drugs, are not sick and are fasting at the time of data collection, are not experiencing menstruation and bleeding at the time of drawing blood, do not have a history of chronic disease / infection, do not smoke and do not have physical activity with very active intensity. Population is a generalization area consisting of objects, subjects that have a certain quantity determined by the researcher to study and then draw conclusions (Sugiyono, 2012). Thus the population of this class is the young women in SMPN X Kab. Bandung as many as 253 young women.

The sampling method used was proportional random sampling, in order to obtain a sample of 72 students.

The variables of this study were blood hemoglobin levels, consumption of Fe tablets and breakfast habits. The breakfast habit is defined as the consumption of staple foods and side dishes that takes place from waking up in the morning until 10.00 WIB. It is said to have a breakfast habit

if in a week they do breakfast > 3 times and it is said that they do not have a breakfast habit if not at all or in a week they do breakfast ≤ 3 times a week.

Primary data collected included the identity of the subject in the form of name, age, presence or absence of medical history, presence or absence of a history of taking supplements and drugs. This identity was obtained through interviews with respondents and recorded on the subject's identity form. The hemoglobin level of the subjects at the time of the study was obtained through the results of the examination of hemoglobin levels carried out by researchers with the assistance of other health workers. Then to collect data regarding consumption of Fe tablets and breakfast habits, researchers distributed questionnaires to be filled in by respondents to find out their breakfast habits and consumption of the Fe table.

III. Results and Discussion

Hb levels

Table 1. Frequency Distribution of Hb Levels

Hb levels	amount	Percentage
≥ 12 g / dl	63	87%
< 12 g / dl	9	13%
Total	72	100%

Based on table 1, obtained from 72 adolescent girls, most of the respondents were 63 people (87%) hb levels ≥ 12 g / dl. And a small proportion of respondents as many as 9 people (13%) hb levels < 12 g / dl.

Consumption of Iron (Fe)

Table 2. Frequency Distribution Based on Iron (Fe) Consumption

Consume Fe	amount	Percentage
Yes	47	65%
Not	25	35%
Total	72	100%

Based on table 2, it is obtained from 72 female adolescents, more than half of the respondents, namely 47 people (65%) consumed Fe. And less than half of the respondents, as many as 25 people (35%), did not consume Fe.

Breakfast habits

Table 3. Frequency Distribution Based on Breakfast Habits

Breakfast habits	amount	Percentage
Yes	45	62%
Not	27	38%
Total	72	100%

Based on table 3, it is obtained from 72 female adolescents, more than half of the respondents, namely 45 people (62%) do the habit of having breakfast. And less than half of the respondents, namely 27 people (38%) did not do the habit of breakfast.

Frequency Distribution of Hb Levels Based on Fe Consumption

Table 4. Frequency Distribution of Hb Levels Based on Fe Consumption at SMPN X Bandung Regency

Kadar HB	Consumption Fe		Amount	Percentage
	Yes	Not		
<12 g / dl	1	8	9	12%
>12 g / dl	46	17	63	88%
Total	47	25	72	100%

Based on table 4, it is obtained from 72 adolescent girls, almost no one has hb <12 gr / dl, as many as 1 person (11.1%) consumes Fe, and young women who have hb <12 gr / dl, a small proportion of the respondents are 8 people (88 , 9%) did not consume female adolescents who had hb \geq 12 gr / dl, more than half of the respondents were 46 people (73.02%) consuming fe and young women who had hb \geq 12gr / dl, a small proportion of respondents were 17 people (26 , 98%) do not consume fe.

Frequency Distribution of Hb Levels Based on Breakfast Habits

Table 5. Frequency Distribution of Hb Levels Based on Breakfast Habits at SMPN X Kab. Bandung

Kadar HB	Breakfast habits		Amount	Percentage
	Yes	Not		
<12 g / dl	3	6	9	
>12 g / dl	42	21	63	87.
Total	45	27	72	100%

Based on table 5, it is obtained from 72 teenage girls that almost none of them have hb <12 gr / dl as many as 3 people (33.3%) do breakfast habits. And young women who have an hb <12 gr / dl, a small proportion of the respondents are 6 people (66.7%) \geq 12gr / dl, more than half of the respondents are 42 people (66.7%) doing breakfast habits and young women who have an HB \geq 12gr / dl less than half of the respondents as many as 22 people (33.3%) did not do the habit of having breakfast.

IV. Discussion

1. Frequency distribution of Hb levels

Based on table 1, obtained from 72 young women, most of the respondents were 63 people (87%) hb levels \geq 12 g / dl. And a small proportion of respondents as many as 9 people (13%) hb levels <12gr / dl.

The normal Hb in adolescent girls is > 12 g / dl. Young women are said to be anemic if their Hb levels are <12 gr / dl1. Adolescence is the age stage that comes after childhood ends, marked by rapid physical growth. In general, anemia is more common in women and girls than men. What is very unfortunate is that most sufferers do not know or are not aware of it, even when they know they still consider anemia a trivial problem. (Irianto, 2015) From the results of the examination that most of the young women had hb levels \geq 12gr / dl because there was already an iron supplement program from the government through the local health center, even so there were still girls who had Hb levels <12gr / dl. So it is necessary to do further examination to find out other factors.

Furthermore, Public Health Center will carry out monitoring regarding the provision of blood supplemented tablets to female students in each school which is carried out and supervised by school teachers / class teachers with a frequency of giving once a week. After that, students are expected to return home immediately to avoid feeling nauseous due to drinking iron tablets. (Tablets Add Blood) (Depkes RI, 2013).

2. Frequency distribution based on iron consumption (fe)

Based on table 2 obtained from 72 young women more than half of the respondents, namely as many as 47 people (65%) consumed Fe. And less than half of the respondents, as many as 25 people (35%), did not consume Fe.

The benefits of iron (Fe) supplementation are often hampered by adherence to taking Fe tablets. Adherence in taking Fe tablets is one of the most influential factors in the success of the iron (Fe) supplementation program in addition to the provision of Fe tablets and their distribution system (Budiarni and Subagio, 2012).

Teenagers more than half of the girls at SMPN X consume Fe, but there are also less than half who do not consume Fe due to fear of poisoning and nausea and vomiting, so the role of health workers is to provide counseling to young women about the benefits of consuming Fe and how to overcome the effects of consuming Fe tablets.

3. Frequency distribution based on breakfast habits

Based on table 3, it was obtained from 72 young women more than half of the respondents, namely as many as 45 people (62%) did the habit of having breakfast. And less than half of the respondents, namely 27 people (38%) did not do the habit of breakfast.

There are 13 guidelines for balanced nutrition, namely eating the food that is eaten in the morning, before the activity is 3 times a day between 06.00 - 08.00. (Hartoyo, 2015)

Teenagers of SMPN X more than half of them do the habit of having breakfast, but less than half of them do not do the habit of breakfast because they are lazy even though there are many benefits if they do breakfast. Breakfast is very important because school time is an activity that requires energy and sufficient calories. Breakfast can have a positive impact on school attendance on learning achievement, if you skip breakfast you will tire easily, easily get drowsy, body shakes and your desire to learn decreases. Therefore, it is hoped that parents will monitor and pay more attention so that their children do not miss to do breakfast before doing activities.

4. Frequency distribution of Hb levels based on consumption of fe

Based on table 4, it is obtained from 72 adolescent girls who have Hb levels ≥ 12 gr / dl, as many as 63 people, 46 of them consumed Fe and 17 people did not consume Fe. Likewise, out of 72 adolescent girls who had hb < 12 gr / dl, 1 of them consumed Fe and 8 people did not consume Fe.

Heni's research result (2012) explains that the incidence of anemia in adolescent girls (Case Study at SMK Negeri 1 Tegal City) occurs in those whose high levels of iron intake are in the deficit category, and it also occurs due to lack of food consumption which can increase absorption. iron so that iron needs are not met.

Iron that from animal origin, namely; meat, chicken, fish, eggs. Iron comes from plant-based foods, namely nuts, green vegetables, and Ambon banana. Diversity of food consumption plays an important role in helping increase the absorption of Fe in the body. The presence of animal protein, vitamin C, vitamin A, folic acid, and other micronutrients can increase the absorption of iron in the body. Another benefit of consuming iron source foods is the fulfillment of vitamin A adequacy, because iron sources are usually a source of vitamin A (Almatsier, 2014).

Teenagers Most of the girls at SMPN X had normal HB levels and a small portion of their Hb levels were less than normal. Most of which have Hb levels ≥ 12 gr / dl consumed Fe and most of the students who had Hb levels < 12 gr / dl did not consume Fe tablet.

Research conducted by Aisyah in 2018 suggested that students who consumed blood-added tablets (TTD) were associated with the incidence of anemia in adolescents and students who did not consume Fe Tablet had 0.021 times the risk compared to those who consumed Fe.

In this study, although it does not describe the statistical correlation, from the results of data collection that those who do not consume Fe tend to the results show that many students experience Hb levels. $<12 \text{ gr / dl}$.

Government programs through the puskesmas and in collaboration with the school have There is a program of giving iron tablet (Tablet Add Blood) but there are still many who do not consume it, a small proportion of students only consume it at school because it is monitored by the puskesmas and teachers, but after returning home some consume it and some do not consume it. then the role of the puskesmas and teachers must work together with the parents of students so that parents can monitor their children to consume according to schedule properly. So that it can reduce HB levels that are less than normal and the TTD program can run well.

5. Frequency distribution of Hb levels based on breakfast habits

Based on table 5, it is obtained from 72 young women who have hb levels $\geq 12 \text{ gr / dl}$ as many as 63 people, of whom 42 people do breakfast habits and 21 people do not eat breakfast. Meanwhile, out of 72 young women, 9 of them had hb levels $<12 \text{ gr / dl}$, 3 of them did breakfast and 6 did not eat breakfast.

Not having breakfast will be exposed to anemia. Those of you who do not take breakfast will be threatened with anemia. Anemia arises from a lack of intake of foods containing iron. The need for iron for you women is 8.5 mg per day, while for women 18.9 mg per day. This is what causes some of them to develop anemia because they cannot meet the adequate level of iron. Iron is closely related to the supply of the required amount of blood. Iron is also closely related to hemoglobin, if iron falls, the hemoglobin level in the blood will also decrease. Hemoglobin is in charge of transporting oxygen throughout the body, so that if the hb level is less than normal it can cause weakness, fatigue, lethargy, fatigue, and weakness, often abbreviated as 5L, all of which are symptoms of anemia.

Children those who do not skip breakfast will experience physical problems, especially lack of energy for activities. Children who don't eat breakfast will experience a lack of energy and motivation to do activities. In addition, malnutrition and micronutrient deficiencies can have an impact on their physical, mental, health and cognitive function. Another impact was also felt in the teaching and learning process, namely the children became less concentrated, easily tired, easily drowsy and other physical disorders. (Khomsan, 2014).

Teenagers of the girls of SMPN X more than half of them do the habit of having breakfast, but less than half of them do not eat breakfast, almost half of them have Hb levels $<12 \text{ gr / dl}$. The reasons for not having breakfast are lazy, being on a diet, not having time, etc., even though breakfast is very important as energy for doing activities, especially for activities at school.

The results of research conducted by Tatik (2014) there is a relationship between breakfast habits and hemoglobin levels, $p = 0.035$ and $r = 0.763$. Young women who do not have breakfast habits are 6 times more likely to have low Hb levels than young women who have breakfast habits.

Because it is expected that parents pay more attention so that their children do not bulk up to eat breakfast before doing activities because the benefits are very good.

V. Conclusion

Adolescents can be categorized as vulnerable in facing nutritional problems. Several reasons that make adolescents categorized as vulnerable are 1). Growth acceleration, 2). Changes in lifestyle and eating habits require adjustments in energy and nutrient intake, 3). High physical activity increases the need for energy and nutrients. Indicators to measure the nutritional condition of adolescents, one of which is checking the levels of hemoglobin (Hb). Hb level is used as a measure to assess anemia status or not. Hb levels are influenced by several things including consumption of Fe tablets and breakfast habits. From the research results, as many as 72 junior high school students were examined for their Hb levels, 63 people had Hb levels $\geq 12 \text{ gr / dl}$ and 9 people had Hb levels $<12 \text{ gr / dl}$. However, it should be noted that 9 people have Hb levels $<12 \text{ gr / dl}$, most of them do not consume iron and having breakfast

Suggestion

It is hoped that the SMPN schools can improve the quality and quantity in providing education or education on reproductive health to adolescent girls, especially to overcome anemia. By providing supervision of the iron supplement (tablet to add blood) from the health center to young women to consume them together before returning home from school so that they are controlled, further enhancing the students / students to apply the habit of morning advice before leaving for school, as well as ensuring Food snacks served in the school canteen support the nutritional intake needed by students. Then work with the local health center to carry out routine checks on the hemoglobin levels of the students.

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