RELATIONSHIP OF PROVISION OF IRON (Fe) TABLETS TO HEMOGLOBIN (Hb) LEVELS IN ADOLESCENT WOMEN AT PUSKESMAS KABILA KAB. BONE BOLANGO

Sulastri Ismail[1), Rini Daud Supu[2), and Niluh Arwati[3)
[1,2,3) Bina Mandiri University Gorontalo
Email: sulastriismail2555@gmail.com

ABSTRACT

This study aims to determine the relationship of giving Fe tablets to hemoglobin levels in adolescent girls.

The research method uses a quantitative analytic approach. The type of data used is primary data, namely the results of giving Fe tablets to hemoglobin levels in adolescent girls and secondary data obtained from data from the Kabila Health Center and the Gorontalo Provincial Health Office. The sampling technique in this study used a purposive sampling technique with a total sample of 26 people.

The results showed that there was a significant relationship between Fe tablets and Hemoglobin levels, namely 0.04 more <0.05. The average hemoglobin level of adolescent girls aged 15-17 years was obtained at the Kabila District Health Center. Bone Bolango is 12.4 g/dL. The conclusion of this study is that there is a significant relationship between Fe tablets and hemoglobin levels, which is 0.04 more than 0.05. suggestions for further researchers, it is better for further researchers to conduct further research on other factors that affect hemoglobin levels.

Keywords: Fe Tablets, Hemoglobin Level, Young Women

INTRODUCTION

Health is one of the main elements and influences the improvement of all aspects of the health care system for all levels of society [10]. The health problem which is now experienced in several countries, including Indonesia, with the highest prevalence is anemia. According to the results of the World Health Organization (WHO) on the world wide prevalence of anemia, it shows where the world's population gets anemia [27].

At this time, facing the corona virus pandemic, Indonesia itself is also struggling to overcome a nutritional problem. A nutritional problem that has become the center of attention is anemia in adolescence, because this disorder can endanger the future of teenagers, generally Indonesian teenagers. According to the National Institute of Health (NIH), anemia is a condition when the body does not have a sufficient number of red blood cells [1].

Anemia is the condition of a person's body when there is a shortage of red blood cells (erythrocytes) in blood circulation and the period of hemoglobin has not yet fulfilled its function in carrying oxygen to all body tissues. Until now, anemia among

Sulastri Ismail, Rini Daud Supu, and Niluh Arwati

Relationship of Provision of Iron (Fe) Tablets to Hemoglobin (Hb) Levels in Adolescent Women at Puskesmas Kabila Kab. Bone Bolango

adolescent girls is quite high, namely the prevalence of anemia in the world ranging from 40-88% [26]. In developing countries, the rate of anemia for young women is around 53.7% through all adolescents, anemia is always experienced by young women due to stress conditions, menstruation and slow eating [12].

Based on the world health organization (WHO, 2015) globally, the prevalence of anemia in the whole world is 41.8%. The prevalence of anemia cases in Asia is 48.2%, Africa is 57.1%, America is 24.1% and Europe is 25.1%. Anemia is more likely to be experienced in developing countries than in developed countries [28].

Based on data from the 2018 Basic Health Research, in Indonesia, the number of people with anemia (lack of blood) is very often found by women (23.9%) than men (18.4%) because women are more at risk of lack of blood during menstruation or during pregnancy. . The prevalence of anemia in the province of Central Java is 57.7%, Yogyakarta is 60.0%, and Bali is 95% [22].

Anemia data obtained by researchers from the Gorontalo Provincial Health Office in 2020 are Boalemo Regency (16.9%), Gorontalo Regency (4.1%), Pohuwato Regency (1.2%), Bone Bolango Regency (1.9%), North Gorontalo Regency (12.1%), City (3.4%) and Gorontalo Province (5.7%) [9].

The data on adolescent girls obtained by researchers from the Health Office of Gorontalo Province is the total number of female adolescents as many as 347,481 people, of which 57,025 people received iron tablets (16,4%). While the data for young women per district, namely Boalemo 7,308 people, the number who received TTD was 1,051 people (14.4%). Gorontalo Regency as many as 256,998 people, the number who received TTD was 30,575 people (11.9%). Gorontalo City as many as 26,338 people, the

number who received TTD was 9,534 people (36.2). Bone Bolango Regency as many as 7,882 people, the number who received TTD was 6,462 (82%). North Gorontalo Regency as many as 48,966 people, the number who received TTD was 9,403 people (36.2%) [8]

Based on data from previous observations that have been carried out by observers at the research location, namely at the Kabila District Health Center. Bone Bolango, the total number of young women as many as 2,221 people and who consume iron tablets as many as 165 people. Puskesmas Kabila gives 4 tablets of Fe which are consumed for 1 month, 1 tablet every week is consumed [18].

In an effort to reduce the prevalence of anemia in adolescents, starting in 2014, the government through the Ministry of Health of the Republic of Indonesia promoted a blood supplement (TTD) program. This program includes the provision of blood supplementation with folic acid through the administration of blood-boosting tablets (TTD) [14]. In 2018, there were 76.2% of young women who received TTD in the last 12 months. But only 2.13% where using TTD based on input (ie a number of 52 granules at one year) [2].

The relationship between iron (Fe) tablets in increasing hemoglobin levels shows that giving iron (Fe) tablets is very effective in overcoming the formation of anemia. Iron deficiency anemia can be overcome by giving iron tablets mainly through food. Obedience in using Fe tablets affects the change in hemoglobin levels, when optimal hb levels cannot yet occur anemia [3].

Fe (iron) tablets are a mineral that is needed in the formation of red blood cells (erythrocytes). Iron has various essential functions in the body, namely for oxygen transport equipment with the lungs in body tissues, cell transport equipment, for electron transport equipment in cells and

Sulastri Ismail, Rini Daud Supu, and Niluh Arwati

Relationship of Provision of Iron (Fe) Tablets to Hemoglobin (Hb) Levels in Adolescent Women at Puskesmas Kabila Kab. Bone Bolango

for integrating enzyme reactions in body tissues [11].

Natural iron can be obtained through food, the main source of iron compounds are green vegetable food products, animals and nuts. The main difficulty in meeting iron needs is the small level of absorption of iron compounds in the body, mainly vegetable sources of iron compounds are quite absorbed 1-2%, but the absorption rate of iron compounds from animal foods can be up to 10-20%. That is, iron compounds originating from animal sources are absorbed very quickly compared to iron originating through vegetable sources [5].

Figure 1. Iron Tablets or Blood
Supplement Tablets (TTD)
Source: Shodikin, Ali, 2020)

Fe tablets (blood-boosting tablets) are iron compound supplements containing 60 mg of elemental iron with 0.400 folic acid. Fe tablets when consumed on a regular basis can overcome and recur of anemia. Dosage by giving blood-added tablets for women of childbearing age is recommended to be used regularly in a dose of 1 tablet per week with 1 tablet per day during menstruation. Sufficient value of iron compounds for women aged 13-15 years with 15-18 years is 26 mg/day [13]. According to the Indonesian Ministry of Health. (2015), the benefits of Fe tablets are as follows:

1. Replaces iron which is lost with the blood during menstruation [13].
2. Pregnant and lactating women, so the need for iron is very high which needs to be provided since adolescence [13].
3. Develop learning ability, work ability and quality of human resources [13].
4. Developing nutritional status & health of adolescent girls [13].
5. Treating women and girls with anrmia [13].

Fe tablets will have a good effect as a nutritional improvement if consumed according to the rules of use. The rules for consuming Fe tablets are based on the Indonesian Ministry of Health. 2015, as follows:

1) Take 1 tablet of Fe once a week & it is recommended to take 1 tablet per day every day during menstruation [13].
2) For pregnant women, take 1 tablet of Fe every day for at least 90 days of pregnancy & 40 days after giving birth [13].
3) Take Fe tablets with water, do not drink with coffee, milk or tea because it can reduce the absorption of iron in the body so that its benefits can be reduced [13].
4) Side effects that arise are in the form of mild, harmless symptoms such as stomach discomfort, nausea, difficulty in defecation & black stools [13].
5) To reduce side effects, take Fe tablets after dinner before going to bed, but if after taking Fe tablets, you can eat fruit [13].
6) Store Fe tablets in a dry place, free from direct sunlight, keep out of reach of children & after opening must be closed tightly again. Fe tablets that have changed color should not be drunk (original color: blood red) [13].
7) Fe tablets do not cause hypertension (high blood pressure) [13].

According to Almatzier (2013), iron has several functions, namely:

a. Energy metabolism

In each cell, iron acts according to the electron transport protein chain that is useful in the final steps of energy metabolism. Some of the iron is found in hemoglobin, which is a protein

Sulastri Ismail, Rini Daud Supu, and Niluh Arwati

Relationship of Provision of Iron (Fe) Tablets to Hemoglobin (Hb) Levels in Adolescent Women at Puskesmas Kabila Kab. Bone Bolango

molecule that contains iron through red blood cells and myoglobin with muscles. Hemoglobin in the blood has the function of carrying oxygen through the lungs throughout the body's tissues in carrying carbon dioxide back through all the cells in the lungs that is excreted through the body. Myoglobin is useful for oxygen resorvoire, acceptance and release of oxygen in muscle cells [5].

b. Learning ability

Various parts of the brain have the highest levels of iron obtained through iron transport which has an effect on transferrine transport. Low levels of iron in the brain during life cannot be replaced when it is an adult and can have a negative effect on brain function, especially in the function of the neurotransmitter system. Then, the sensitivity of dopamine receptors decreases and can end in the loss of these receptors [5].

Every human being can lose as much as 0.6 mg of iron which is excreted, generally through feces (feces). Women who lose iron compounds in the amount of ± 1.3 mg per day compared to men, because women have menstruation to make the need for iron compounds for women is very large compared to men [11].

The volume of blood lost in adolescent girls who are menstruating ranges from 25-30 cc per month during menstruation. A person who has decreased Hb levels (1-2 ml or >2 ml) should still be given Fe tablets to prevent anemia. The total iron loss of adolescent girls can reach about 1.25 mg per day when added with basal loss and when calculated according to frequency, it is known that blood circulation lost during menstruation is only 2.5% of female adolescents who need iron more than 2.4 mg per day [3].

Hemoglobin is a protein molecule in red blood cells that is useful in transporting oxygen through the lungs to all body tissues in carrying carbon dioxide through body tissues in the lungs. Hemoglobin is one of the more important products in red blood cells (erythrocytes) and is formed in the bone marrow [6].
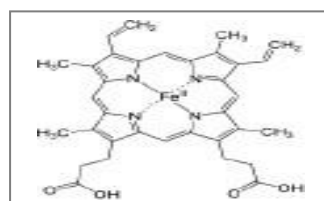

Figure 2. Chemical Structure of Hb
Source: Suparyanto, dr. 2014)

The Hb level is a very simple determination used in determining the status of anemia on the widest scale. Blood samples are often used such as peripheral blood samples, such as fingers, but can also be used through the toes and ears and in producing very accurate data, it is recommended to use venous blood samples [16]. Blood hemoglobin levels can be grouped in the following table:

Table 1. Normal limits of Hb levels according to age and gender

Group	Age	Hemoglobin (Gr/Dl)
Child	6 months – 6 years	11 gr/dl
	6 years – 14 years	12 gr/dl
Mature	Man	13 gr/dl
	Woman	12 gr/dl
	Pregnant women	11 gr/dl

Source: (Nugraha and Gilang, 2017)

The purpose of hemoglobin examination is to help diagnose anemia, determine hemoglobin levels in the blood and determine body solution deficits because they increase hemoglobin levels [16].

Sulastri Ismail, Rini Daud Supu, and Niluh Arwati

Relationship of Provision of Iron (Fe) Tablets to Hemoglobin (Hb) Levels in Adolescent Women at Puskesmas Kabila Kab. Bone Bolango

Based on Nugraha (2017), there are several types of procedures that can be used to determine Hb levels in the blood where:

1) Tallquist Method

The test is based on the color of the blood because hemoglobin plays a role in producing the red color in erythrocytes. Tallquist color standard has 10 gradations through pink to dark red, in the range of 10% to 100% and each gradation has a difference of 10%. The strength of Hemoglobin in the blood is the same (comparable) in the red color of the blood, until the test is carried out in a way that compares the red color of the blood to a standardized color whose hemoglobin strength has been identified in percent (%). This method is often used because the error rate of the procedure reaches 30-50% with an effect of the error being the standardization of colors that are not normal (not able to maintain their original color) and quickly fade because of standards such as the color on paper [16].

1) Copper Sulfate (CuS04) Method

The test is based on specific gravity with CuSO4 used having a specific gravity (BJ) of 1.053. Determination of hemoglobin levels in this procedure is carried out by means of dripping blood in a container or glass containing 1.053 BJ CuSO4 liquid, so that the blood can be wrapped in copper proteinase, which overcomes the BJ conversion in 15 seconds. When the blood sinks for 15 seconds, the hemoglobin level exceeds 12.5 grams/dL. When blood is always present in the middle or reappears on the surface, so that the hemoglobin level is below 12.5 grams/dL. If a particular drop of blood sinks slowly, the test data are dubious until they are always used for retesting or

confirmation in other highly accurate methods [16].

2) Sahli Method

Sahli's method of Hemoglobin level testing includes Hemoglobine testing which is based on color making (visualization and colorimetry). Blood that reacts with HCL can be in the form of hematine acid with a brown color, the color formed can be compared to standardization in the dilution method using aquadest. Tests using this method are often carried out at various health centers with the smallest laboratories because they only require simple equipment, but testing these procedures uses a data error rate of 15% -30% [16].

3) Cyanmethemoglobin method

The test for hemoglobin levels using the cyanmethemoglobine procedure is a test that is in accordance with colorimetry using spectro and photometer equipment. This procedure is a consideration in determining the hemoglobin level because the error is only 2%. The reagent named in Drabkins contains several types of chemical substances, then when realized together the blood can get a color that matches the level of hemoglobin in the blood. The impact of errors in the testing of these procedures mainly comes from measuring equipment, reagents, and analytical techniques [16].

4) Digital Hemoglobinometer Method

Hemoglobin level examination procedures Digital hemoglobinometers are responsive equipment in need of easy, affordable and accurate equipment for measuring hemoglobin levels for health workers outside the laboratory. The digital hemoglobinometer is a handheld nanobioelectronic device in a self-calibrating sensor requiring a duration of less than 60 seconds for each

Sulastri Ismail, Rini Daud Supu, and Niluh Arwati

Relationship of Provision of Iron (Fe) Tablets to Hemoglobin (Hb) Levels in Adolescent Women at Puskesmas Kabila Kab. Bone Bolango

hemoglobin count. The digital hemoglobinometer system is based on the principle of reflectance photometry. Blood samples that can be used in the form of complete blood such as capillary, venous, arterial or peripheral blood in the measurement of hemoglobin levels with the requirement that 8 ml of blood samples are sufficient. The equipment is a 3.6 volt (V) rechargeable battery making it suitable for use in locations where there is no electricity. The digital hemoglobinometer can be used in a temperature range of 5-4°C. The digital hemoglobinometer uses a thin plastic strip that contains chemical reagents. The chemical reagent in the strip is ferrocyanide. The strip has a unique code that must be added to the device each time the strip is used [16].

5) Hematology Analyzer Method Hemoglobin level testing

Hematology Analyzer counts for gold standards to facilitate diagnosis in several hematological tests including determination of hemoglobine levels. This equipment can make it easier to diagnose disorders suffered by someone such as cancer, diabetes, etc. The equipment measures samples such as blood in the collection of 2 ml of blood stored in the EDTA tube and then the blood is sucked in by the cuvette tube, then the blood flows into the equipment in the addition of blood cells. Blood tests carried out using this equipment include testing for hemoglobine, both volume and number, various leukocyte cells with a number of platelet cells in the sample.

This equipment has the advantage that it is very short when carrying out the test because it only requires a duration of about 2-3 minutes compared to using manual equipment, then the data released by the hematology analyzer equipment has mainly passed quality control carried out by an internal health facility laboratory. The Hematology Analyzer is a tool that has been proven to provide accurate and reliable data regarding the strength of hemoglobine Currently, many hematology analyzer products are manufactured by several companies engaged in the medicalequipment sector, one of which is the Dirui BCC 3600 hematology analyzer[16].

Various impacts that affect hemoglobin levels based on Bakta (2013).

1. Dietary habit

Sources of iron are found in foods that come from nuts, green vegetables, animals with liver, which are the most abundant sources of Fe (6.0-14.0). The iron found in foods is in the heme form associated with protein and in the nonhem form associated with protein and the nonhem form is a complex inorganic iron compound [6].

2. Adequacy of Iron in the Body

The adequacy of iron compounds to be recommended is total iron compound drinks sourced through food that can be prepared adequately in each healthy individual in 95% of the population so that it can be avoided through the risk of anemia [6].

3. Iron Deficiency

The main element present in red blood cells is iron as the core of the hemoglobin molecule. When a deficiency of iron compounds can result in a decrease in hemoglobin production. So that it can experience a reduction in the size of red blood cells, low hemoglobin content and a lack of a number of red blood cells, causing a person to experience anemia [6].

Sulastri Ismail, Rini Daud Supu, and Niluh Arwati

Relationship of Provision of Iron (Fe) Tablets to Hemoglobin (Hb) Levels in Adolescent Women at Puskesmas Kabila Kab. Bone Bolango

Figure 3. Hematology Analyzer: Dirui BCC 3600

Source: Setia Anugrah Medika, 2020

Adolescence includes the period when a person develops when he shows his secondary sexual presence to when he reaches sexual maturation. Adolescence is often referred to as a period of change, where attitudes change with physical changes. Adolescents in certain stages of change have several changes both in terms of emotions, bodies, interests, patterns of action and are also full of adolescent problems [19].

The volume of blood lost in adolescent girls who are menstruating ranges from 25-30 cc per month during menstruation. A person who has decreased Hb levels (1-2 ml or >2 ml) should still be given Fe tablets to prevent anemia. The total iron loss of adolescent girls can reach about 1.25 mg per day when added with basal loss and when calculated according to frequency, it is known that blood circulation lost during menstruation is only 2.5% of female adolescents who need iron more than 2.4 mg per day [3].

Based on Permatasari (2017), adolescents are divided into 3 sub-phases, namely:

1. Early Teen

    Age in adolescence starts from the age of 11-14 years. The characteristics of teenagers at that time were like to hang out with friends of the same kind, very easily influenced by peers and like to compare themselves with others [19].

2. Middle Teen

    Age in this teenager starts between the ages of 15-17 years. At this time, adolescents are more comfortable with their own circumstances, begin to make friends with the opposite sex, like to discuss and develop future plans [19]

3. Late Teen

    Age in adolescence starts between the ages of 18-21 years. In this adolescent period through being violent but not rebellious and began to separate from the family. Late adolescence considers peers unimportant, makes close friends with the opposite sex and is more focused on planning for the future [19]

    In adolescence with a transition period to independence, interests are also due to family changes in children, actions with children's routines are changed when the amount of food consumed outside the home increases. These changes can be formed because adolescents begin to position the high value of accepting and associating with their peers, therefore their eating habits are more quickly influenced by their peers [4].

    The results of a previous study conducted by Cahyaningtyas (2017) on 30 young women at SMA N. 2 Ngaglik, Sleman Regency, namely young women who consume Fe tablets have an average hemoglobin value of 13.1 g/dL, so there is a relationship between Fe tablets and hemoglobin levels. . The test results show that there is a relationship between consuming Fe tablets and increasing hemoglobin levels in adolescent girls [7].

RESEARCH METHODS

The research approach in this observation uses a quantitative approach with the type of observation using analytical research, namely the proximity of the Cross Sectional. Sources of data in this observation using primary data and secondary data. Primary data on these observations in the form of testing data on hemoglobin levels for the administration of Fe tablets to adolescent girls at the Kabila District Health Center. Bone Bolango, while the secondary data on

Widya Mardiyanti Domili, Laksmyn Kadir, and Wiharsri

Description of Urine Nitrite Levels in Patients of Urinary Tract Infection (UTI) in Toto Kabila Hospital Bone Bolango Regency Gorontalo Province

observations were obtained from data from the Puskesmas and the Gorontalo Provincial Health Office.

The research population is an individual who can be targeted by a sample obtained from one of the observations. The population in this observation were young women who participated or did not take part in the program of giving blood tablets in the Kabila District Health Center. Bone Bolango as many as 165 young women [14].

The sample for this observation is female adolescents in the Kabila District Health Center. Bone Bolango. The number of samples obtained is a total of 26 people to be obtained through the sample determination formula (Lemeshow) as follows:

$$n = \frac{NZ^2\,1 - a/2p(1 - P)}{(N - 1)d^2 + Z^2\,1 - a/2\,P\,(1 - P)}$$

$$n = \frac{N\,Z^2\,1 - a/2\,P\,(1 - P)}{(N - 1)d^2 + Z^2\,1 - a/2\,P\,(1 - P)}$$

$$n = \frac{165 \times 1{,}64^2 \times 0{,}5 \times (1 - 0{,}5)}{(165 - 1)\,0{,}5^2 + 1{,}65^2 \times 0{,}5\,(1 - 0{,}5)}$$

$$n = \frac{165 \times 2{,}72 \times 0{,}25}{164 \times 0{,}0025 + 2{,}72 \times 0{,}25}$$

$$n = \frac{112{,}2}{3{,}69 + 0{,}68}$$

$$n = \frac{112{,}2}{4{,}37} =$$

n = 26 Sampel

The sample collection technique used in these observations is purposive sampling. Purposive Sampling is a technique for collecting samples (venous blood) through a population of observations that match the criteria and one of these criteria in achieving the observation goals desired by the observer. In this study, the data or patient identity, including direct interviews with respondents, were recorded on an informed consent sheet. Meanwhile, the data on hemoglobin (Hb) levels were collected by direct examination of Hb levels using a Hematology Analyzer.

Data analysis techniques on this observation using Univariate Analysis and Bivariate Analysis. Univariate analysis is one of the data analysis techniques in one variable independently, each variable is analyzed not by linking it to other variables, while univariate analysis in this study is presented in the form of a table accompanied by a narration which is presented in the form of a percentage. Bivariate analysis using a cross table in highlighting and analyzing the relationship between two variables, the data obtained in the Chi-Square analysis using the SPSS program is the value of p, then compared in = 0.05. When the price of p < through = 0.05 so that there is a relationship to two certain variables.

RESEARCH RESULT

Based on the research that has been done, the following results were obtained:

1. Distribution of Hemoglobin Levels

Table 1. Distribution of Hemoglobin Levels.

Hemoglobin Examination Results	Frequency	(%)
Normal	23	88%
Low	3	12%
Amount	26	100%

Source: Research Primary Data, 2021

In accordance with table 1, it shows where the results of the examination of normal Hb levels are 23 people in the percentage (88%) and the test data for low Hb levels are 3 people in the percentage (12%).

2. Characteristics by Age

Table 2. Age Distribution of Young Women

Young Women Age	Frequency	(%)
15 years	5	19%
16 years	12	46%
17 years	9	35%
Amount	26	100%

Sulastri Ismail, Rini Daud Supu, and Niluh Arwati

Relationship of Provision of Iron (Fe) Tablets to Hemoglobin (Hb) Levels in Adolescent Women at Puskesmas Kabila Kab. Bone Bolango

Source: Research Primary Data, 2021

In accordance with table 2, it shows that 15 year old girls are 5 people in the percentage (19%), 16 year old girls are 12 people in percentage (46%), and 17 year old girls are 17 years old. 9 souls in percentage (35%).

3. **Characteristics of Respondents Based on Education**

Table 3. Education Level Distribution

Level of education	Frequency	(%)
junior high school	7	27%
senior High School	19	73%
Amount	26	100

Source: Research Primary Data, 2021

In accordance with table 3, it shows that the junior high school education level is 7 people in the percentage (27%) with the high school education level being 19 people in the percentage (73%).

DISCUSSION

1. **Results of Examination of Hemoglobin Levels**

The research was conducted on young women aged 15-17 years with junior high and high school levels at the Kabila District Health Center. Bone Bolango. Hemoglobin level is a very fast measure used in determining the status of anemia on the widest scale. The blood samples used are generally peripheral blood samples, for example through the fingers, but can also be used through the toes and ears and in obtaining accurate results it is recommended to use a venous blood sample [16].

Through the observational data obtained, it shows where the results of the examination of hemoglobin levels for adolescent girls aged 15-17 years at the Kabila District Health Center. Bone Bolango obtained 23 samples of normal hemoglobin levels with a percentage (88%) and 3 samples with a percentage (12%).

This observation is in accordance with previous observations conducted by Sitti M (2016) in which 23 adolescents (60.5%) had hemoglobin (Hb) <11 g/dL and 15 had hemoglobin (Hb) >11 g/dL. people (39.5%) [24].

2. **Age**

Adolescence or what is commonly referred to as a transition period from childhood is also an adult period when there is a change in body measurements, body benefits, psychological aspects with functionalist aspects. Adolescence is a period that has a more impact on health, especially for young women, during this period there are stages of menstruation every month [20].

Through the observational data obtained, it shows that 15 year old girls in the percentage (19%), 16 year old girls 12 in percentage (46%) and 17 year old girls 9 in percentage. (35%).

This study is in line with Maria Cristina Endang's research (2018) that the data is analyzed by frequency where the age with the most anemia is 16-19 years old with a total of 32 people (36.8%) or is called late adolescence [15].

3. **Level of education**

Education is needed to produce information and supporting information about health, so that it can improve the quality of life. Education can also influence individuals, including one's actions and lifestyle, especially when it comes to motivation in fighting actions as well as in formation. The level of individual education can affect when giving a response to something until a comparison of education levels causes a comparison of the insights generated for respondents regarding consuming Fe tablets [17].

Sulastri Ismail, Rini Daud Supu, and Niluh Arwati

Relationship of Provision of Iron (Fe) Tablets to Hemoglobin (Hb) Levels in Adolescent Women at Puskesmas Kabila Kab. Bone Bolango

From the observational data obtained, it shows that there are 7 samples of young women with junior high school education (27%) and 19 samples of young women with high school education with a percentage (73%).

This research is in line with Rizqi Nur Alifah's research (2016) that most of the respondents' last education was junior high school with a total of 50 people (60.2%). The greater the level of education that individuals get, so that they can broaden their horizons with the knowledge obtained because a lot of information is obtained through formal or non-formal education [21].

CONCLUSION

Based on the results of observations regarding the results of the examination of Hb levels for adolescent girls at the Kabila District Health Center. Bone Bolango conclusions can be drawn where:

1. There is a significant relationship with Fe tablets and hemoglobin levels, namely 0.04 more <0.05.
2. Through observational data, it was obtained that the average hemoglobin level of adolescent girls aged 15-17 years at the Kabila Health Center was 12.4 g/dL.

REFERENCE

[1] Assegaff and Husayn. 2021. Anemia, the Enemy of Indonesian Youth (National Nutrition Day Opinion).

[2] Anggraeni and Novi. 2021. Portrait of Anemia in Indonesian Adolescents.

[3] Arisman. 2010. The Effect of Anemia on Adolescent Girls at Islamic Boarding Schools in Cirebon. Journal: 2010. Vol. 2.2010.

[4] Andini Ema Retang. 2019. The Relationship between Diet and Hemoglobin Levels in Adolescent Girls at SMP Negeri 2 Ungaran, Semarang Regency.

[5] Almatzier. 2013. Basic Principles of Nutrition Science. Main Library of Jakarta.

[6] devotee. 2013. Concise Clinical Hematology.

[7] Cahyaningtyas. 2017. Thesis Publication Manuscript. Effect of Fe Tablet Consumption on Increased Hemoglobin Levels in Adolescent Girls at SMAN 2 Ngeglik, Sleman Regency. Diploma IV Educator Midwife Study Program. Faculty of Health Sciences, Aisyah University. Yogyakarta.

[8] Gorontalo Provincial Health Office. 2019. Consumption of Blood Increase Tablets and Prevent Anemia in Young Women.

[9] Gorontalo Provincial Health Office. 2020. Anemia,

[10] Helmizar. 2013. Evaluation of Maternity Insurance Policy (Jampersal) in Reducing Maternal and Infant Mortality Rates in Indonesia. Journal of Public Health 2013.

[11] Istiany and Rusilanti. 2013.*Applied Nutrition*. PT Youth Rosdakarya. Bandung

[12] Kaimuddin, Nur. Hariati Lestari. Jusniar Rusli Afa. Screening and Determinants of Anemia Incidence in Teenage Girls at SMA Negeri 3 Kendari 2017. Scientific Journal of Public Health Students. VOL. 2./NO.6/May 2017: ISSN 250-731X. Retrieved 17 May 2021.

[13] Indonesian Ministry of Health. 2015. Development of Nutrition and MCH. Directorate of Community Nutrition. Indonesian Ministry of Health. Jakarta.

[14] Indonesian Ministry of Health. 2020. Guidelines for Giving Blood Supplemental Tablets (TTD) for Young Women During the Covid-19 Pandemic. Directorate of Community Nutrition. Indonesian Ministry of Health. Jakarta.

Sulastri Ismail, Rini Daud Supu, and Niluh Arwati

Relationship of Provision of Iron (Fe) Tablets to Hemoglobin (Hb) Levels in Adolescent Women at Puskesmas Kabila Kab. Bone Bolango

[15] Masturoh and Anggita. 2018. Health Research Methodology. PPSDM Ministry of Health RI. Jakarta.

[16] Maria Christina Endang. 2018. Factors Associated with the Incidence of Anemia in Young Women in the Working Area of the Kambaniru Public Health Center, East Sumba Regency: Primary Health Journal. Vol 3 (1), 16-29.

[17] Nugraha, Gilang. 2017. Basic Hematology Laboratory Examination Guide Edition 2. Trans Info Media. Jakarta.

[18] Notoatmodjo. 2012. Health Promotion and Health Behavior. Jakarta: Rineka Cipta.

[19] Kabila District Health Center. Bone Bolango. 2021. Primary Data.

[20] Permatasari. 2017. The Effect of the Blood Supplementation Tablet (TTD) Program on the Improvement of Iron Status in Adolescent Girls in the City of Bogor. Bogor Agricultural Institute. Essay.

[21] Prawirohardjo, Sarwono. 2014. Sarwono Prawihardjo Midwifery Science. PT. Bina Pustaka Sarwono Prawihardjo. Jakarta.

[22] Rizq Nur Alifah. 2016. The Relationship of Fe Tablet Supplementation with Hemoglobin Levels in Third Trimester Pregnant Women at the Air Cold Health Centerin Padang City.

[23] Basic Health Research (Riskesdas) 2018. The Indonesian Ministry of Health Research and Development Agency in 2018.

[24] Shodikin, Ali. 2020. Meet Iron Needs, Health Center Distributes Blood Enhancing Tablets to Elementary School Students.

[25] Suparyanto, dr. 2014. Blood and Hemoglobin.

[26] Setia Anugrah Medika. 2020. BCC-600.

[26] unarto and Kadir. 2019. *Factors Causing Iron Deficiency Anemia in Pregnant Women in the Working Area of Bongo Nol Health Center, Boalemo Regency. Journal of Health Sciences and Research Vol. 1, No. 2, 2019.*

[27] Sitti M. 2016. The Relationship of Adolescent Compliance in Consuming Iron (Fe) Tablets with Hemoglobin (Hb) Levels in the Ranomut Health Center Area, Manado City.

[28] World Health Organization (WHO). 2016. Pocket Book of Iron Deficiency Anemia. Jakarta: EGC.

[29] World Health Organization (WHO). 2015. Iron Deficiency Anemia: Assessment, Prevention and Control. Geneva: World Health Organization, 201