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Provision of FE Tablets to The Event of Anemia in Adolescent Women in The Area Community Health Center Technical Implementation Unit Liggang Bigung

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Abstract
Introduction: *Adolescent girls will experience menstruation every month which at this time of menstruation they will be at risk of developing anemia. The impact of iron deficiency anemia includes lack of concentration in school-age adolescents which results in decreased school achievement, decreased work ability for workers so that their productivity is reduced.* ***Objective:*** *The purpose of this study was to see the effectiveness of giving FE Tablets to the incidence of anemia.* ***Methods:*** *Using a pre-experimental research design with control. The population in the study was 97 young women at Junior High School 01 Linggang Begung.* ***Results:*** *the results of the Wiloxcon test in the intervention group were obtained (p value 0.000<α<0.05). These results explain that there is a significant effect of the intervention on Hb levels with (p value < = 0.05). These results explain that there are differences in the intervention of Hb levels in the intervention and control groups with (p value < = 0.05).* ***Discussion:*** *Administration of FE Tablets can increase the erythropoiesis process which initiates the formation of mitotic unipotential stem cells while differentiation into erythrocyte cells when stimulated by erythropoietin also stimulates further mitosis of promonoblasts, basophilic normoblasts and polychromatophilic normoblasts.* ***Conclusion:*** *there was an increase of 1.95 g/dl in the intervention group and 0.15 g/dl in the control group. Where the administration of FE Tablets with a commitment to consuming FE Tablets can increase Hb levels for 1 month of administration.*
Keywords: FE Tablets; The Incidence of Anemia; Adolescent Girls;

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Introduction

Anemia in adolescents is a health problem that still affects Indonesia. According to WHO (2015) the prevalence of anemia in adolescent girls is 29%. The prevalence of anemia in young women aged 10-18 years is 41.5% in developing countries (WHO 2016).

Young women every month will have menstruation at risk of anemia. Factors that can influence anemia are knowledge, sosial economy, lifestyle, menstrual patterns and dietary habits (Bhadra and Deb 2020). As a result of anemia, it can cause symptoms such as lethargy, weakness, fatigue, fatigue, decreased endurance and quick forgetting.

The results of the 2018 Riskesdas Survey show that anemia in general in Indonesia is still high at 22.7% in adolescents aged 13-18 years (Kemenkes 2018). The most common nutritional anemia found in society is iron nutrition anemia. Due to the lack of iron content in the daily diet, the absorption of iron from food is very low. Iron absorption is strongly influenced by inhibitory factors such as phytate, oxalates, and tannins (tea, coffee), as well as influenced by driving factors such as vitamin C and animal protein (Kraemer and Zimmermann 2007).

The reductionof iron deficiency anemia in general is ironsupplementation (Wibowo and Purba 2018). However, the side effects caused by the use of iron supplements are very many such as nausea, constipation, black stools and diarrhea (Gibney et al. 2015).

Data from Linggang Bigung Subdistrict, West Kutai Regency, East Kalimantan Province 20 21 The number of young women at Junior High School 2 Linggang Bigung, West Kutai Regency, amounted to 166 young women. The results of the data on the Hemoglobin Examination of adolescents putri conducted at Junior High School 1 Linggang Bigung, West Kutai Regency after a hemoglobin examination was carried out as many as 166 young women and those who had anemia were around 97 young women.

Based on interviews, often fireflies, sometimes nausea when waking up, often not having breakfast before going to school, like to consume snacks carelessly and when giving blood-boosting supplements from technical implementation unit puskesmas linggang bigung, there are some parents of female students who do not allow their children to take the drug due to the appearance of symptoms of nausea and vomiting.

Based on this data, prospective researchers want to research the effectiveness of giving FE Tablets to hemoglobin levels in young women in the technical implementation unit area of linggang bigung health center, west kutai Regency.

Method

Types of *Quasi Experimental* design research design *one-group pretest & post-test design with control* (Anshori and Iswati 2019)**.** The population is 97 adolescent girls. The research sample with simple sampling was 39 respondents each.

The inclusion criteria in this study were girls with anmie who did not consume FE Tablets, were willing to be respondents and were not in a state of illness. Meanwhile, the criteria for the inclusion of adolescent girls who are sick.

The measuring instruments in this study are glucotest, questionnaires and observation sheets. Researchers conducted validity tests on 25 students at Junior High School 01 Linggang Begung where 5 were valid and reliable.

This study was conducted in 1 month where each adolescent princess was given FE Tablets once every 1 week 4 times while the control group was only given standard interventions. Furthermore, data analysis uses descriptive tests and *Wilcoxon* tests and Mann whitney tests.

Results and Discussion

Result

1. Intervention Group Hb Levels

Table 1

Hb levels before and after the intervention of the FE Tablets Giving group to Young Women in the Technical Implementation Unit Area of Linggang Bigung Health Center

Variable	Pre-Intervention		Post Intervention	
	F	%	f	%
Anemia	37	94.9	6	15.4
No Anemia	2	5.1	33	84.6
Total	**39**	**100**	**39**	**100**

Based on table 1, it shows that Hb levels before intervention were 37 respondents (94.9%) and no anemia as many as 2 respondents (5.1%). After being given FE Tablets, the majority were not anemic as many as 33 respondents (84.6%) and anemia as many as 6 respondents (15.4%).

2. Control Group Hb Levels

Table 2

Hb levels before and after the FE Tablets Control group in Young Women in the Technical Implementation Unit Area of Linggang Bigung Health Center

Variable	Pre-Intervention		Intervention Post	
	F	%	f	%
Anemia	35	89.7	34	87.2
No Anemia	4	10.3	5	12.8
Total	**39**	**100**	**39**	**100**

Based on table 2, it shows that the Hb levels before the intervention were 35 respondents (89.7%) and no anemia as many as 4 respondents (10.3%). Post data in the control group showed that the majority of anemia was 34 respondents (87.2%) and no anemia as many as 5 respondents (12.8%).

3. Effect of intervention on intervention and Control groups

Table 3

Giving FE Tablets for Intervention Groups at Junior High School 01 Linggang Begung in 2022

Intervention Group Hb Levels	**Intervention**	**Mean ±SD**	***With***	
Shoes	Before	11.32± 0.63	-5.396	0.000*
	After	13.27± 1.03		
Control Group Hb Levels	Control	Mean ±SD	*With*	*P*
Shoes	Before	11.28± 0.43	-0.577	0.564*
	After	11.64± 0.85		

The results in table 3 showed that before the intervention the average value was 11.32 mg/dl and after the intervention was given it showed the average Hb to be 13.27 mg/dl. The results of the statistical test analysis showed that in the variable Hb levels of the intervention group obtained (*p value* 0.000<α<0.05). The results explained that there was a meaningful effect of intervention on Hb levels with (*p* value < α = 0.05).

4. Hb differences in adolescent Girls in Junior High School 01 Linggang Bigung in Intervention and control Groups

Table 4

Differentiation of Hb Levels of Intervention and Control Groups in Adolescent Girls at Junior High School 01 Linggang Begung in 2022

Hb levels of Intervention and Control Groups	**Variable Class**	**Mean rank**	***With***	
Shoes	Intervention	55.71	-6.32	0.000*
	Control	23.29		

The results in table 4 show the mean rank of the intervention group of 55.71 and the mean rank of the control group of 23.29. The results of the statistical test analysis showed that in the variable Hb levels of the intervention group obtained (*p value* 0.000<α<0.05). The results explained that there was a difference in intervention levels of Hb levels of the intervention and control groups with (*p* value < α = 0.05).

Discussion

1. Overview of Hb Levels of Intervention and Control Groups in Adolescent Girls at Junior High School 01 Linggam Begung

The results of table 1 Hb levels before the majority intervention were anemia as many as 37 respondents (94.9%) and non-anemia as many as 2 respondents (5.1%). After being given FE Tablets, the majority were not anemic as many as 33 respondents (84.6%) and anemia as many as 6 respondents (15.4%). The majority of respondents aged >12 years were 15 respondents (38.5%).

Adolescents have experienced *menarche* priodes which are at risk of iron deficiency anemia. The amount of blood lost during one menstrual period is about 20-25 cc, this amount implies iron loss of 12.5-15 mg/month, or approximately equal to 0.4-0.5 mg/day. If the amount is added to the basal loss, the total amount of iron lost is 1.25 mg/day (Sari et al. 2016).

Based on table 2 shows Hb levels before intervention the majority were anemia and post dtaata in the majority control group of anemia. Potential anemia in developing countries. If the woman has anemia, it will be very dangerous during pregnancy and childbirth. Women suffering from anemia will have the potential to give birth to babies with low body weight (Silverberg 2012). Anemia in adolescents can cause delayed physical growth, behavioral as well as emotional disorders (Benz Jr, Berliner, and Schiffman 2018).

The picture of the incidence of anemia in adolescents of the majority of girls aged 12 years shows overall both the intervention group and the control group in the category of mild anemia. Assumptions related to anemia that occur in adolescent girls in the age range of 11-16 years are related to *menarche* in the dominance group and the rest are associated with the menstrual cycle that occurs in adolescent girls.

2. Effect of FE Tablets on Hb Remaja Puteri at Junior High School 01 Linggam Begung

The results in table 3 showed that before the intervention the average value was 11.32 mg/dl and after the intervention showed an average Hb to 13.27 mg/dl there was an increase of 1.95 g/dl. The results of the statistical test analysis showed that in the variable Hb levels of the intervention group obtained (*p value* $0.000<\alpha<0.05$). The results explained that there was a meaningful effect of intervention on Hb levels with (*p* value < $\alpha = 0.05$).

This research is in line with mentioning that a lack of the micro mineral iron (Fe) can cause anemia due to the lack of iron element entry in the food consumed, due to impaired absorption, or the amount of iron that comes out of the body, for example in bleeding (Linder 2012).

The results of the study of Luciana et al (2019) obtained the average Hb level before 11.764 g / dl. and after 12.36 g/dl with an increase of 0.6 g/dl. The results of the statistical test are obtained by the value (*p-value* = 0.000) so it can be concluded that there is a significant difference between Hb levels before and after TTD consumption (Luciana, Hasnidar, and Masikki 2019).

The increase in Hb of the control group was 0.15 g/dl and in the intervention group of 0.75 g/dl, the value (p=0.000) meant that there was a difference in the average Hb levels before and after the consumption of blood-added tablets in the control group. So it can be concluded that there is an influence of Fe tablet consumption on Adolescent Puteri at Junior High School 01 Linggang Begang.

The implementation of this study where respondents consumed FE Tablets at the same time as drinking water. Of the respondents who consumed FE Tablets along with

plain water, most had normal hemoglobin levels. Water is an H_2O compound important for all forms of life, each molecule of which contains one oxygen and two hydrogen atoms connected by covalent bonds. The function of hemoglobin in the blood is to carry oxygen throughout the body, precisely for body organs and tissues. The oxygen content in puth water is bound to hemoglobin in blood cells which makes the blood red.

Changes in Hb levels in postal measurements of both the group given FE Tablets and the control group that did not get treatment showed an increase in those Hb levels. Although there is a difference in the average value of the two groups, there is an increase. The researchers' assumptions related to such changes were associated with other aspects of favoring in the increase in Hb that occurred in the intervention and control groups. Where the aspects that support the increase in Hb are the consumption of vegetables and fruits, the consumption of meat and other food sources consumed by the repsonden during the intervention process.

3. Differences in Hb Levels of Intervention and Control Groups in Adolescent Girls at Junior High School 01 Linggang Begung.

The results in table 4 show the mean rank of the intervention group of 55.71 and the mean rank of the control group of 23.29. The results of the statistical test analysis showed that in the variable Hb levels of the intervention group obtained (*p value* $0.000<\alpha<0.05$). The results explained that there was a difference in intervention levels of Hb levels of the intervention and control groups with (*p* value $< \alpha = 0.05$).

From the results of the research that has been carried out, the results obtained and the *Man Whitney test* has been carried out to determine the difference in the average difference in Hb levels between the intervention group and the control group in young women at Junior High School 01 Linggang begung.

The results of this penelitian describe an increase in hemoglobin levels after being given intervention. The results of the statistical test obtained the average difference in hemoglobin levels of 1.95 g / dl obtained a p-value of 0.000 (p-value ≤ a 0.05) so that it can be interpreted that there is a significant difference between the intervention group (consumption of FE Tablets) and the control group so that it can be concluded that there is an influence of giving blood-added tablets in young women.

Based on Putrianti's research (2019) shows that giving lemon juice drunk for 3 weeks can increase Hb levels 0.82 gr / dl p value = $0.000 < \alpha$ 0.05 (Putrianti, 2019). Based on research conducted by Rukmaini & Nunu, (2020) showed that the increase in hemoglobin levels of adolescents who consumed FE Tablets on average was 1.5 g / dl and the increase in hemoglobin levels of female students in the Fe tablet and honey consumption group averaged 2.0 g / dl p value = $0.000 <\alpha$ 0.05 (Retno, 2020).

Researchers' assumptions of FE Tablets on Hb levels could have a major influence on increasing hemoglobin levels but gave quite different values to each group. This is because all respondents consume FE Tablets regularly. The increase in hemoglobin levels is greater when FE Tablets are carried out, which play a role in increasing hemoglobin in adolescents.

In addition, this is also in accordance with research conducted by Nuryanti et al (2015) that vitamin C in lemons can help accelerate the absorption of iron in the body and play a role in transferring iron in the blood, mobilizing iron deposits, especially hemosiderin in the spleen. In addition to Fe contains high folic acid which serves to help the body to make new red blood cells (Nurhayati, Halimatusakdiah, and Asniah 2015).

The results of this study also indicated that all respondents consumed fruits and vegetables. Anemia can be overcome by consuming fruits and vegetables. Fruits and vegetables are potential nutrients to overcome anemia because they contain iron, copper and manganese which are key elements in hemoglobin synthesis. Fruits and vegetables also have properties as protector cells preventing chromosomal damage in fanconi anemia patients in vitro. This is due to the high antioxidants possessed by honey. Antioxidants help eliminate the adverse effects of oxidative stress (Suryani 2021).

As for internal and external factors, namely from external goals and motivations, many students reasoned that the Fe Tablet administration program was not important. According to the study, the results of the study of young women who consumed blood-added tablets 80 people 80%, and, positive attitudes 87 people (87%), received teacher support 69 people (69%), got parental support 73 people (73%) (Irianti and Sahiroh 2019).

In line with the research of Rista and Nurbaety (2018) lack of monitoring in the consumption of FE Tablets (Rista Andaruni and Nurbaety 2018). According to Widiastuti & Rusmini (2019) stated the highest reason FE Tablets are not consumed is boredom or laziness (Widiastuti and Rusmini 2019)(Widiastuti and Rusmini 2019). In addition, research conducted by Lestari (2018) states that young women do not consume TTD during menstruation due to lack of interest in consuming TTD which is based on individuals feeling sick and do not need TTD (Lestari 2018).

The increase in hemoglobin levels in remja puteri at JUNIOR HIGH SCHOOL 01 Linngang Begung can also be known before post-measurement of hemoglobin levels of students, most of whom are in the mild range of <12g / dl and have consumed FE Tablets given by researchers. This can be proven in the theory that says that giving these FE Tablets to young women is very useful in increasing Hb levels. When adolescent girls experience menstruation, on average, they bleed 60 ml per month which is equal to 30 mg of iron, so women need tablets to add blood one milligram per day to maintain balance (Sulastri 2020).

The assumption of differences in Hb levels in the intervention and ontrol groups was associated with the effectiveness of FE Tablets that would physiologically increase the production of erythropeitin in the bone sum-sum. So that the administration of Fe in the intervention group clearly showed significant results with treatment carried out for 1 month with a frequency of administration 1 time a week. The difference in the results of the Hb change in the intervention group was also related to the indicator of Fe tablet administration where all respondents to the intervention did not miss the schedule of Fe tablet consumption that had been instructed by the researcher during the study process.

Conclusion

The results of the study explained that there was a meaningful influence of intervention on Hb levels with (*p* value < α = 0.05). Statistical tests showed that at the variable Hb levels of the intervention group were obtained (*p value* 0.000<α<0.05). The results explained that there was a difference in intervention levels of Hb levels of the intervention and control groups with (*p* value <α = 0.05).

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