

SUPPLEMENTARY BLOOD TABLETS (TTD) IN ADOLESCENT WOMEN (REMATRY) TO INCREASE HEMOGLOBIN (HB) LEVELS

Vianty Mutya Sari¹, Siti Difta Rahmatika^{2*}, Tonasih³

STIKes Muhammadiyah Cirebon

*Correspondence email : diftarahmatika@gmail.com

ABSTRAK TABLET TAMBAHAN DARAH (TTD) PADA REMAJA PEREMPUAN (REMATRI) UNTUK MENINGKATKAN KADAR HEMOGLOBIN (HB)

Latar Belakang: Masalah gizi merupakan keadaan yang berpengaruh buruk terhadap kesehatan remaja. Masalah gizi pada remaja antara lain anemia dan kurang energi kronik (KEK). Berdasarkan data Riskesdas 2018, prevalensi anemia pada remaja sebesar 32 %, artinya 3-4 dari 10 remaja menderita anemia (Kemenkes RI, 2018)¹. Rematri adalah calon ibu, yang suatu saat akan hamil dan melahirkan, remaja dengan anemia berisiko mengalami anemia saat hamil. Hal ini berdampak negatif terhadap pertumbuhan dan perkembangan janin serta komplikasi kehamilan dan persalinan, bahkan menyebabkan kematian ibu dan anak. Disamping itu Kondisi gizi remaja sebelum kehamilan merupakan salah satu faktor yang mempengaruhi terjadinya stunting.

Tujuan : untuk mengetahui pengaruh pemberian TTD pada rematri terhadap peningkatan kadar Hb.

Metode : Desain penelitian yang akan digunakan adalah quasi eksperimental, dengan metode *nonequivalent control grup design*. Responden dalam penelitian ini berjumlah 50 responden yang kemudian dibagi dua kelompok, 25 orang kelompok kontrol dan 25 orang kelompok perlakuan dimana ada intervensi pada kelompok perlakuan yaitu dengan konsumsi TTD seminggu sekali selama 3 bulan. Data kadar Hb yang diperoleh dianalisis dan dilakukan uji perbandingan menggunakan analisis *Uji Wilcoxon*.

Hasil : hasil yang diperoleh P value sebesar $0,000 < \alpha (0,05)$, artinya terdapat pengaruh yang signifikan antara pemberian TTD pada rematri terhadap peningkatan kadar Hb.

Kesimpulan: Terdapat pengaruh yang signifikan antara pemberian TTD pada rematri terhadap peningkatan kadar Hb untuk mencegah stunting sehingga menghasilkan generasi penerus bangsa yang berkualitas di wilayah puskesmas Kedawung Kabupaten Cirebon.

Saran : Program pemberian TTD pada remaja bisa lebih ditingkatkan dalam distribusi, monitoring dan evaluasi serta Pendidikan kesehatan tentang pencegahan anemia pada remaja putri dari pihak sekolah, puskesmas wilayah kerja.

Kata kunci: Kadar Hb, Rematri, TTD,

ABSTRACT

Background : Nutritional problems are conditions that adversely affect adolescent health. Nutritional problems in adolescents include anemia and chronic lack of energy. Based on the 2018 Riskesdas data, the prevalence of anemia in adolescents is 32%, it means that 3-4 out of 10 adolescents suffer from anemia. (Kemenkes RI, 2018)¹. Adolescent girls (rematri) are prospective mothers who will become pregnant and give birth, adolescents with anemia are at risk of developing anemia during pregnancy. This has a negative impact on the growth and development of the fetus as well as complications of pregnancy and childbirth, and even causes the death of mother and child. Besides that, the nutritional condition of adolescents before pregnancy is one of the factors that influence the occurrence of stunting.

Purpose : The purpose of this study was to determine the effect of giving TTD to Rematri on increasing Hb levels.

Method : The design that will be used in this research is quasi-experimental, with a nonequivalent control group design method. Respondents total in this study were about 50 respondents who were divided into two groups, 25 people in the control group and 25 in the treatment group where there was intervention in the treatment group, namely by consuming TTD once a week for 3 months. The Hb level data obtained were analyzed and a comparative test was performed using the Wilcoxon's test analysis.

Result : The results obtained are P value of $0.000 < \alpha (0.05)$, it means that there is a significant effect between giving TTD to Rematri on increasing Hb levels.

Conclusion : There is a significant effect between giving TTD to Rematri on increasing Hb levels to prevent stunting so as to produce a quality future generation in the Kedawung Public Health Center, Cirebon District.

Suggestion : The program for giving TTD to Rematri can be further improved in distribution, monitoring and evaluation, also health education about preventing anemia in rematri from schools and health centers.

Keywords: Hb Level, Rematri, TTD

INTRODUCTION

Adolescent is a transition phase from childhood into an adult phase. It is characterized by fast physical growth. Adolescents in society are known by various terms that indicate an age group nor include children neither adults (Rohan & Siyito, 2013)². During adolescents, there are some health problems happen related to nutrition. Conditions that affect adolescent health include anemia and chronic lack of energy. Anemia is still a major nutritional problem in Indonesia, especially iron deficiency anemia, which is often experienced by children especially teenagers. Anemia is a condition when the level of Hb in the blood is lower than normal (WHO, 2011)³.

The incidence of anemia in Indonesia is still quite high. Based on data from Riskesdas 2018, the prevalence of anemia in adolescents is 32%, it means that 3-4 out of 10 adolescents suffer from anemia. (Kemkes, 2021)⁴. On the other hand, the percentage of pregnant women with anemia mostly happen at 15-24 years old as much as 84.6%, 33.7% at 25-34 years old, 33.6% at 35-44 years old and 24% at 45-54 years old. The proportion of the incidence of anemia at the age of 10-19 years is 8.1%. From these data, the highest age percentage of pregnant women suffering from anemia is on the age 15-24 years old (Kemkes, 2018)⁵.

The causes of anemia are chronic blood loss, inadequate iron intake and absorption and an increased need for iron intake for the formation of red blood cells which generally occurs at puberty (Jaelani, 2017)⁶.

Rematri have a ten times higher risk of suffering from anemia than adolescent boys. This is because Rematri have a period time once in a month, so, they lose iron through the discharge of the blood. (Proverawati, 2011)⁷ Another cause is that young women have a diet and limiting food intake, so that various symptoms occur which are actually symptoms of nutritional disorders. Besides that, adolescents going through a process of accelerated growth, so that, the body experiencing a lack of important nutrients such as iron. (Achmad Djaeni, 2000 dalam Giyanti Firi 2016).⁸ Anemia in adolescents cause an impact on decreasing productivity or academic ability because there is no

spirit for learning. Anemia can also interfere with growth and development problem. In addition, the body's resistance will decrease so that it is easy to get sick. (Morris JL RH, 2015).⁹

Young women are the future generation who will determine the next generation. They will give birth and become a mother in the future. If they are anemic during teenage years, they are likely to suffer from anemia during pregnancy. This condition will get worse because during pregnancy, more nutrients are needed. If not treated, there will be a risk of bleeding during delivery, low birth weight babies and eventually giving birth to stunting babies (Kemkeno, 2021).¹⁰

Improvement of nutrition in adolescents through specific nutritional interventions such as nutrition education, fortification and supplementation as well as treatment of comorbidities are needed. The government's effort in dealing with the problem of anemia in adolescents is to implement a program of giving TTD to adolescents through schools. This program aims to improve the nutrition of rematri in order to prevent stunting and anemia as well as to increase iron reserves in order to grow productive and healthy generation. Iron (Fe) tablets are tablets for supplementation to overcome nutritional deficiency anemia containing 60 mg elemental iron and 400 mcg folic acid (Kemkes, 2020).¹¹

The program for giving TTD to rematri in Cirebon District has been running and the coverage obtained in 2016 reached 1.2%, 2017 reached 2.4%, and increased in 2018 as much as 61.27%, but is still far from the target of 80% (Cirebon district health profile, 2018).¹²

RESEARCH METHODOLOGY

The research design that will be used is quasi-experimental, with a nonequivalent control group design method. Respondents total in this study are 50 respondents who have this following criteria : inclusion requirements are those who are willing to be respondents, the respondents who take TTD and already have a menstrua phase as treatment group, and the exclusion criteria is not willing to be a respondent and who has not menstruated. The respondents in this study divided into two groups, 25 people in the control group and 25 people in the

treatment group where there was an intervention in the treatment group, these intervention is consuming blood supplement tablets once a week for 3 months and consuming the tablets everyday in a period time. The research was carried out through several stages, they are preliminary study which included licensing, evaluation of iron tablet (Fe) availability, school offline schedules and selection of research samples an then it continued to data collection which was divided into 2 stages with the first Hb examination in the treatment group and the second stage was haemoglobin examination after 3 months for the treatment and control groups. After the results have been collected, the haemoglobin level data obtained are analyzed and a comparison test is performed using the Wilcoxon test analysis using the SPSS computer system.

RESEARCH RESULT

Table 1

Distribution of Hb Levels in the Treatment Group

Distribution	Total	%
Hb Level Pre Treatment		
Anemia	18	72
Not Anemia	7	28
Hb Level Post Treatment		

Anemia	0	0
Not Anemia	25	100
Total	25	100

Based on Table 1, it is known that in the treatment group before the intervention there were 18 respondents (72%) had anemia and after the intervention no one had anemia.

Table 2
Distribution of Hb Levels in the Control Group

Distribution	Total	%
Hb Level Pre Treatment		
Anemia	13	52
Not Anemia	12	48
Hb Level Post Treatment		
Anemia	3	12
Not Anemia	22	88
Total	25	100

Based on Table 2, it is known that in the control group before the intervention there were 13 respondents (52%) had anemia and after the intervention only 3 respondents (12%) had anemia.

Table 3
The Effect of Giving TTD to Rematri on Increased Hb Levels

Variabel Hb Levels	Mean Rank		Sum Of Ranks		Ties	P Value	N
	Negative	Positive	Negative	Positive			
Treatment Group							
Measurement (Pre)							
Measurement (Post)	1 (1,00)	23 (13,00)	1,00	299,00	1		
Control Group						0,000	50
Measurement (Pre)							
Measurement (Post)	6 (7,33)	18 (14,22)	44,00	256,00	1		

Based on Table 3, it is known that the P value is $0.000 < \alpha (0.05)$, it means that there is a significant difference between Hb Levels before and after being given TTD.

DISCUSSION

Based on Table. 3 negative rows or differences (negative) between haemoglobin levels before and after in the treatment and control groups, there is 1 negative data in the treatment group and 6 in the control group, which means 1 respondent in the treatment group and 6 respondents in the control group had a decrease in Hb levels. The mean rank or average decrease was 1.00 in the treatment group and 7.33 in the control group, while the number of

negative rankings or Sum Of Ranks was 1.00 in the treatment group and 44.00 in the control group. Positive ranks or the difference (positive) between Hb levels before and after, there are 23 positive data in the treatment group and 18 in the control group, which means that 23 respondents and 18 respondents had an increase in Hb levels before getting iron tablets (Fe) and after getting iron tablets (Fe). The mean rank or average had been increasing into 13.00 in the treatment group and 14.22 in the control group, while the number of positive ranks or Sum Of Ranks was 299.0 in the treatment group and 256.00 in the control group. P value of $0.000 < \alpha (0.05)$ which means that there is a significant effect between giving TTD to Rematri on increasing Hb levels.

Previous research data by the Cirebon district health office in 2019 took a sample once regarding the picture of anemia from junior high school to high school teenagers after being given TTD. Previous research data conducted by the Cirebon District Health Office in 2019, they had a study of the description of anemia in the students from secondary school to high school after being given TTD and the results obtained that the majority of them (67.73%) did not have anemia (Data BOK Labkesda Kab. Cirebon, 2019)¹³.

This study is a recent study to test haemoglobin levels between consuming and non-consuming groups that has not been carried out by the Cirebon District Health Office. The program for giving TTD once had obstacles in the availability of iron tablets (Fe) and the distribution of the school to students due to the pandemic. Therefore, the results of this study could strengthen the implementation of the program for giving blood supplementary tablets to continue to be maximized for Rematri in Cirebon District.

This is in line with research by Hariyati, Anggi Vina Dkk (2020)¹⁴ regarding the Effect of Giving Fe Tablets on Hb at the female cadets of the Politeknik Ilmu Pelayaran Semarang, it was found that the intervention group after being given TTD, the average increase in Hb levels into 2.40 g/dl. Meanwhile, in the control group who were not given blood supplementary tablets, it increased only 0.39 g/dl. Based on the independent test, the calculated t value was 6.136 with a p-value of 0.000. This shows that there is a significant difference in haemoglobin levels in female cadets after being given TTD between the intervention and control groups.

This is also the same as explained by the results of the research by Cahyanintyas (2017)¹⁵ who conduct a research at SMAN 2 Ngaglik, Sleman District with 30 respondents who were given the intervention of iron tablets (Fe) for 30 days. The study showed that before given of iron tablets (Fe), the average value was 12.76 and the average value after given of iron tablets (Fe) was 13.14, so it increased with the difference in value. 0.50. This shows that there is an effect of consuming Fe tablets on increasing Hb levels in Rematri.

The study by Giyanti (2016)⁸ stated that there was a difference in the increase in Hb levels between the control and experimental groups, the average increase was 0.1 and 0.7. In the control group it increased by 40% and in the experimental group it was 93.33%.

Other studies also prove that giving iron tablets affects increasing Hb levels in adolescent girls in high school. (Haryanti, 2021)¹⁶ and

Permatasari (2018)¹⁷ stated that research on Rematri showed that the prevalence of anemia decreased to 15.7%. There was a significant difference between the prevalence of anemia before and after the intervention ($p < 0.05$).

The study by Nuraeni (2019)¹⁸ showed the results that there was an effect of giving iron tablets (Fe) to increase Hb levels of adolescents with anemia. The increasing was 1.01 g/dl. Study by Yuanti (2020)¹⁹ stated that there was a significant effect of giving iron tablets (Fe) on the increasing in Hb levels of Rematri who had anemia.

Iron deficiency anemia is a type of anemia that most often occurs in adolescents. This is because Rematri are in a period of growth and have menstruation every month which is causing iron loss. Along with blood loss, the iron in the blood also loses as much as 5%-10% and causing iron deficiency (Farinendya, 2019)²⁰

Menstruation which is experienced every month make Rematri have a high risk of anemia compared to adolescent boys. Another cause of Rematri is suffer to iron deficiency anemia is due to limiting food consumption, so that, various symptoms occur which are actually symptoms of nutritional disorders. Besides, adolescents had a process of accelerated growth, so, the body had a lack of important nutrients such as iron (Achmad Djaeni, 2000 dalam Giyanti Firi, 2016).⁸

Other causes of iron deficiency anemia include insufficient iron content in the food consumed, increased body's need for iron, very low absorption of iron from food, the presence of parasites in the body such as hookworms or tapeworms or blood loss like in the case of accidents and surgery. (Ani, 2016)²¹

Adolescent girls have a higher need for iron than men. So, the more iron in the body need, the more iron supplementary that must be consumed (Irianto Koes, 2014).²²

The study by Sari, dkk (2019)²³ shows that the average iron intake in Rematri is lower than the recommended nutritional adequacy rate, which is only 10.06 mg/day at the age of 10-12 years and 12.08 mg/day at the age of 3-19 years. The average is below standard.

The study by Menurut Hedi R. Dewoto dan S. Wardhini B.P (2013)²⁴ mentioned that quantity of the level of iron needed daily is influenced by various causes such as age, gender, the amount of blood in the body. If these daily needs are not fulfilled, the iron reserves in the body will be used so that the iron reserves will be run out.

Balanced nutrition that must be consumed by Rematri to avoid anemia is the type of food that

contains sufficient carbohydrates, protein, fat, fiber, vitamins and minerals (Kemenkes, 2020)²⁵.

Study by Solicha 2018²⁶ shows that protein intake and anemia in adolescent girls are related. Adequate protein intake will help the process of transporting iron for the formation of Hb.

Nuraeni (2019)¹⁸ stated that young women are more accustomed to consuming food sources of vegetable protein from the food group of nuts and various processed products such as non-heme iron sources. Meanwhile Tayel D. and Ezzat, S. (2015)²⁷ stated that the absorption of non-heme iron was lower than the source of it in the ferrous form which was more easily absorbed.

Adolescents, in addition to maintain balanced nutrition from food consumption to get iron micronutrients also require iron supplements in the form of TTD, these tablets can increase hemoglobin levels in adolescents, especially Rematri for preparation before pregnancy. TTD increase better oxygenation in cells throughout the body, metabolism will increase and cell function will be optimal, so, the absorption will also better, especially for the brain (Hogan dalam Solikhah, 2021).²⁷

The right way to consume TTD is accompanied by food or drinks containing vitamin C or substances that absorb iron more quickly, or foods containing animal protein such as meat, fish, chicken and eggs. The absorption of iron content is also strongly influenced by the presence of vitamin C in the body, vitamin C can help reduce ferric iron to ferrous in the small intestine, so that, it is easily absorbed by the body, the reduction process will be even greater if the pH in the stomach is more acidic. it can increase the process of iron absorption up to 30%. The highest content of vitamin C is found in guava fruit. (Yusnaini, 2014).²⁸

Research by Erni Muslikah (2017)²⁹ on the Effectiveness of Giving Fe Tablets and Ambon Banana in Increasing Hemoglobin Levels of Anemia in Students at SMA 1 Nguter, Sukoharjo District, showed that there was a significant difference in the increase in Hb levels for the group taking Fe tablets and banana fruit.

Meanwhile Kemenkes recommends when taking TTD, don't take it with food or drinks that contain alcohol, tea, coffee and milk, which can inhibit iron absorption. (Kemenkes, 2020)¹¹

Paputungan (2016)³⁰ stated that there is a relationship between iron intake and the incidence of anemia in female students at SMP N 8 Manado. This is also in line with Sani R in Cahyaningtyas (2017)¹⁵, Consuming TTD on a regular basis has many benefits including being able to treat Rematri who

have anemia, improve nutritional status and adolescent health.

Iron supplementation in adolescents is better done intermittently (Weekly with nutrition education). This will add benefits in addition to preventing anemia in adolescents, it will also increase adolescent obedient in taking Fe tablets (Susanti, 2016).³¹

Based on the latest guidelines for the Prevention and Handling of anemia in adolescent girls, it is recommended that during the pandemic period, the consumption of balanced nutrition, pay attention to the contents of the teenager's menu, drink TTD according to the preventive dose by giving one tablet every week for 52 weeks and drink water and do sports (Kemenkes, 2020)¹¹.

CONCLUSION

There is a significant effect between giving blood supplementary tablets to adolescent girls and increasing hemoglobin levels to prevent stunting, so as to produce a quality future generation in the Kedawang Public Health Center, Cirebon District.

SUGGESTION

For health workers

Health workers, especially midwives, should be able to provide services related to adolescent health, especially in the management of anemia by giving blood supplementary tablets and health promotion related to anemia.

For Government

The results of this study can be used as an input in the evaluation of the program of giving blood supplementary tablets to adolescents, so, they could be taken into consideration to continue these program

For School

School staffs regularly facilitating the students to take TTD at school and evaluating the obedience of students on taking TTD

For the next researcher

Can conduct other studies by considering all other factors that affect the increasing hemoglobin levels that were not studied in this study.

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