

EVALUATION OF THE PROGRAM OF GIVING BLOOD TABLETS TO FEMALE TEENS AT SMAN 18 MAKASSAR

Dinda Tri Lestari^{1*}, Novi Puspita Sari², Nani Apriani Natsir Djide³, Husnul Khatimah⁴,
Masdalis⁵, Reski Pebriani⁶

^{1,2,3,4,5,6} Departmen Of Nutrition, Nani Hasanuddin College of Health
Science, Makassar, Indonesia

* *correspondence author* : dinda@stikesnh.ac.id

Abstract

Background ; Stunting is one of the chronic nutritional problems in Indonesia that has not been resolved until now. Stunting does not only occur in children but also in adolescents. Stunted children will tend to grow into stunted adolescents or adults. Anemia is one of the factors that contributes to the formation of a stunted generation. Anemic women are at risk of giving birth to premature babies, low birth weight (LBW), and small-for-gestational-age (SGA). These three problems have a 3.2 times greater risk of causing children to grow up with stunting problems. In addition, anemia is also a risk for stunted individuals. **Objectives**; One of the targets of this program is adolescent girls. The expected effect of this program is an improvement in hemoglobin concentration. In practice, there are several factors that can affect hemoglobin concentration, including knowledge about anemia and TTD, the level of compliance with TTD consumption, and the management and implementation of the TTD program. The purpose of this study was to analyze the management of the TTD supplementation program by UKS teachers. This study used a cross-sectional design. This study itself was conducted in March-June 2023 at SMAN 18 Makassar. The research subjects included 50 female adolescent students who received the TTD program. This study used primary data including TTD program management data. **Result**; the highest level of compliance in taking blood-boosting tablets was in the low compliance category, conversely at the good knowledge level, most respondents were found to have a moderate compliance category. The results of the Spearman test found a p value of 0.023. This means that there is a significant relationship between knowledge and the level of compliance in taking blood-boosting tablets. **Conclusion**; There is a relationship between the level of knowledge of anemia and compliance with iron supplementation tablets at SMAN 18 Makassar with a p value = 0.023 (<0.05) so that it can be an evaluation of the iron supplementation tablet implementation program carried out by the government.

Keywords: *Anemia, Compliant, Iron Supplementation, Knowledge*

BACKGROUND

Stunting is one of the chronic malnutrition problems in Indonesia that has not been resolved until now. An individual is said to be stunted if the z-score of height for age (TB/A) < -2SD based on the cut off point from the World Health Organization (2007). Stunting conditions can have negative impacts on the body such as suppressing linear growth and causing cognitive development disorders. In the long term, stunting can reduce work capacity and increase the risk of metabolic syndrome and various non-communicable diseases such as heart disease and diabetes mellitus (Prendergast and Humphrey 2014). The prevalence of stunting in the last 5 years is one of the biggest nutritional problems in toddlers in Indonesia. The results of the 2022 Indonesian Nutritional Status Study showed that 21.6% of Indonesian toddlers and 27.2% of toddlers in South Sulawesi experienced stunting.

The incidence of stunting is not only a nutritional problem in children, but also in adolescents. The iron supplementation program is one of the government's programs to overcome the problem of stunting by preventing the occurrence of iron deficiency anemia in stunted and non-stunted individuals. Improving and preventing anemia is considered as one of the modification factors that have a major effect on the birth of children with the potential for stunting (Rahman et al. 2019). One of the targets of this program is adolescent girls. The adolescent period is considered a golden period to prevent anemia and as the right time to build nutritional preparation needed during pregnancy later (UNICEF et al. 2017).

The success of a program cannot be separated from the influence of program management. Good management of the TTD supplementation program will affect the compliance of the target group in consuming TTD (Schultink et al. 1993). The researcher realized that research on the management of the TTD supplementation program in adolescent girls, as well as hemoglobin concentration, especially in adolescent girls with stunting nutritional problems at SMAN 8 Makassar has not been conducted. Therefore, the researcher is interested in analyzing the management of the TTD supplementation program in adolescent girls at SMAN 8 Makassar.

METHOD

Study Design

This research is a quantitative study that uses This study uses a cross-sectional study design, namely research conducted by measuring dependent variables and independent variables at the same time.

Sample

The inclusion criteria for female students are as follows: 1) High school students and/or equivalent who receive a TTD supplementation program; 2) Willing to be a research subject; 3) Willing to provide complete data needed in the study;

Sampling of female adolescents using the simple random sampling technique. The inclusion criteria for female adolescents are as follows: 1) High school students and/or equivalent who receive a TTD supplementation program; 3) Willing to be a research subject; 4) Willing to provide complete data needed in the study; The sample size of female students needed in this study is adjusted to the population in the study, which is 50 subjects.

Data Analysis

The data obtained from filling out questionnaires, interviews, anthropometric measurements and hemoglobin concentration measurements were processed through a process consisting of checking the collected questionnaires (editing), providing data codes (coding), entering research data (entry), rechecking data (cleaning), processing, and data analysis. The data analysis carried out in this study was in the form of: 1. Univariate Analysis This analysis aims to obtain a general picture of the frequency distribution of research results from each variable studied. In addition, through descriptive tests, the distribution of respondent characteristics and each variable studied can be seen. Informed Consent 2.

Bivariate Analysis This analysis aims to see the relationship or influence of one variable on another variable. In this study, Chi-square testing will be used.

RESULTS AND DISCUSSION

Univariate Analysis

Table 1. Characteristics of Respondents

NO	VARIABEL	Min	Maks	Mean
1	Age	14	18	15
2	Weight	36	80	47,5
3	Height	139	168	153
4	Upper Arm Circumference (MUAC)	18	33	23

Table 1 shows that the number of female adolescents involved in this study was 54 subjects. Table 1 shows that the female adolescent subjects have an age range of 14-18 years with an average age of 15 years. The female adolescent subjects have a minimum weight of 35 kg and a maximum of 80 kg with an average weight of 47.5 kg. The female adolescent subjects have a minimum height of 139 cm and a maximum of 168 cm with an average height of 153 cm. The female adolescent subjects have an Upper Arm Circumference (MUAC) of at least 18 cm and a maximum of 33 cm with an average of 23 cm.

Table 2. Respondents' Knowledge Anemia

NO	Pengetahuan	n	%
1	Less (Score <60)	14	25,9
2	Enough (Score 60-80)	34	63
3	Good (Score >80)	6	11,1

Table 2 shows that the female adolescent subjects in the study have a sufficient level of knowledge with a score of 60-80 as many as 34 out of 54 female adolescents studied with a percentage of 63%. There are 6 female adolescent subjects who have a good level of knowledge with a percentage of 11.1%. The female adolescent subjects who have a low level of knowledge with a score below 60 are 14 female adolescents with a percentage of 25.9%.

Table 3. Compliance With Consumption of Blood Supplementation Tablets

NO	Tingkat Kepatuhan	n	%
1	Non-compliant (<70%)	33	61,1
2	Compliant (<u>></u> 70%)	21	38,9

Table 3. shows the results that the level of compliance in consuming TTD with non-compliant female adolescent subjects is 33 subjects with a percentage of 61.1%. While the compliant female adolescent subjects are 21 female adolescent subjects with a percentage of 38.9%.

Bivariat Analysis

Table 4. Relationship between Level of Knowledge of Anemia and Compliance with TTD Consumption

Knowledge	Compliant		Total	<i>p</i>
	Non-compliant	Compliant		
Less	10	4	14	0.023
Enough	18	16	34	
Good	5	1	6	
Total	33	21	54	

Table 4 shows that there is a significant relationship between the level of knowledge and compliance with iron tablet consumption at school by adolescent girls with ($p = 0.023$). Most of the adolescent girls have a sufficient level of knowledge with a score of 60-80 and in line with the level of compliance with iron tablet consumption, most of them are not compliant so that the results of the correlation analysis are in line and there is a significant relationship.

Knowledge is considered a protective factor in preventing anemia in adolescent girls (Mengistu et al. 2019) This study explored adolescent girls' knowledge about anemia and iron supplementation. The aspects asked about knowledge about anemia include the main causes of anemia, common symptoms or signs of anemia, the impact of anemia, how to prevent anemia, and how to detect anemia. Adolescent girls are considered to have knowledge in each aspect of the question if they are able to choose at least one correct answer (Souganidis et al. 2012) Adolescent girls have known that there is more than one symptom or sign of anemia. This is illustrated by the percentage of answer choices that are almost the same across all answer choices. Adolescent girls need to know the common symptoms of anemia so that they can predict themselves and take steps to treat or prevent anemia (Mitra 2020). The impact of anemia that is most widely known by adolescent girls is difficulty concentrating (80.3%). WHO (2017) states that adolescent anemia can affect physical and cognitive growth; work and learning performance and capacity; immune system; and reproductive quality. In addition, anemia that is not treated properly will result in the birth of babies with low birth weight (Ronnenberg et al. 2004; WHO 2017).

How to prevent anemia that is still not widely known by young women is to take deworming medication every 6 months. The occurrence of worm infections needs to be prevented because worms can cause blood and iron loss (Chaparro and Suchdev 2019). In addition, providing TTD supplements to individuals with worms will actually worsen the condition of worms. This is because iron can increase the potential for worm larvae to reproduce in the intestines (Held et al. 2006). Intervention research conducted by Bhoite and Iyer (2012) stated that giving TTD supplements (iron supplements) can still be given to individuals with worms accompanied by giving deworming medication. This combination has been shown to increase hemoglobin levels. Giving deworming medication is a step to reduce the burden of anemia (Hotez et al. 2008). Assessment of the subject's knowledge score about anemia was carried out based on the distribution data in table 2. The accumulated values obtained from each aspect are grouped into three categories. The results of this study showed that the average score of subject knowledge about anemia in both groups was included in the good category (score > 80).

Sufficient knowledge about anemia will lead individuals to make various efforts to meet their nutritional needs and increase compliance with iron supplement consumption, while individuals with low knowledge of anemia tend to experience anemia because these individuals do not know the dangers of anemia and the right food consumption to prevent anemia (Nurhayati et al. 2019). Fitrianti and Miko (2019) stated that adolescent girls with a

low level of knowledge about anemia will be at risk of experiencing anemia by 14.4 times compared to adolescent girls with a good level of knowledge. Iron supplement consumption compliance is an aspect that influences the improvement of hemoglobin concentration.

In addition, Putra et al. (2020) also stated that compliance with iron supplement consumption has a significant relationship with normal hemoglobin levels. Individuals are said to be compliant with taking TTD if the percentage of the number of tablets consumed to the number of tablets received is $\geq 70\%$. Based on research conducted by Putra, Munir and Siam (2020), it was stated that iron tablets have a relationship with the incidence of anemia in adolescent girls. In line with research conducted by Pramardika and Fitriana (2019), the results of the bivariate analysis between the TTD compliance variable and the incidence of anemia showed that the relationship was unidirectional between the two variables, which means that the more adolescent girls are compliant in consuming TTD, the Hb levels of adolescent girls will increase. The role of health center officers and the role of UKS teachers in providing counseling on TTD have an effect on compliance. In line with the results of research by Putri, Simanjuntak and Kusdalinah (2017) which stated that adolescent girls who have hemoglobin levels above 11 mg/dl are adolescent girls who are compliant in consuming iron tablets. The risk will increase by 61.55 times if adolescent girls are not compliant in consuming iron tablets.

CONCLUSION

Based on the results of the research, analysis and discussion that have been carried out, it can be concluded that there is a relationship between the level of knowledge of anemia and compliance with iron supplementation tablets at SMAN 18 Makassar with a p value = 0.023 (<0.05) so that it can be an evaluation of the implementation program for iron supplementation tablets carried out by the government.

Acknowledgements

The authors would like to thank SMAN 18 Makassar and all parties involved who have provided support and motivation for this research.

REFERENCES

- Abebaw B, Dessie Y, Baraki N, Oumer A, Gebru M. 2020. Adherence to iron and folic acid supplementation and associated factors among antenatal care attendants in Northwest Ethiopia. *Int J Public Heal Sci.* 9(1):20–28.
- Abriha A, Yesuf ME, Wassie MM. 2014. Prevalence and associated factors of anemia among pregnant women of Mekelle town: a cross sectional study. *BMC Res Notes.* 7(888):2-6.
- Achadi, Endang E, Laksmningsih. 2013. Faktor-faktor yang berhubungan dengan kepatuhan ibu mengonsumsi tablet besi-folat selama kehamilan. *Jurnal Gizi dan Pangan.* 8(1):63-70.
- Aditianti, Permanasari Y, Julianti ED. 2015. Pendampingan minum tablet tambah darah (TTD) dapat meningkatkan kepatuhan konsumsi ttd pada ibu hamil anemia. *Penelitian Gizi dan Makanan.* 38 (1): 71-78
- [Balitbangkes] Badan Penelitian dan Pengembangan Kesehatan Depkes RI. 2013. Riset Kesehatan Dasar (Riskesdas 2013). Jakarta: Balitbangkes Depkes RI
- [Balitbangkes] Badan Penelitian dan Pengembangan Kesehatan Depkes RI. 2018. Riset Kesehatan Dasar (Riskesdas 2018). Jakarta: Balitbangkes Depkes RI
- [Bappenas] Badan Perencanaan dan Pengembangan Nasional. 2018. Pedoman Pelaksanaan Intervensi Penurunan Stunting Terintegrasi di Kabupaten/Kota. Jakarta: Ministry of National Development Planning/National Development Planning Agency.
- [Bappenas] Badan Perencanaan dan Pengembangan Nasional. 2020. Rencana

The 2nd Nani Hasanuddin International Health Conference (NHIHC)

“Navigation The Future of Health Care Addressing Challenges and Embracing Innovation in Nursing, Midwifery, Nutrition and Pharmaceutical Profession”

The STIKES Nani Hasanuddin, Makassar, August 10-11, 2024

- Pembangunan Jangka Menengah Nasional (RPJMN) 2020-2024. Jakarta: Ministry of National Development Planning/National Development Planning Agency.
- Barker M, Dombrowski S, Colbourn T, Fall CHD, Kriznik NM, Lawrence WT, Norris SA, Ngaiza G, Patel D, Skordis-Worrall J, et al.. 2018. Intervention strategies to improve nutrition and health behaviours before conception. *Lancet* 391(10132):1853–1864.
- Beard J. 2001. Iron biology in immune function, muscle metabolism and neuronal functioning. *J Nutr.* 131(2 Suppl 2):568S–579S
- [Depkes RI] Departemen Kesehatan Republik Indonesia. 2006. Pedoman Penanggulangan Anemia Gizi Untuk Remaja Putri dan Wanita Usia Subur. Jakarta: Depkes RI.
- Derbew B, Atnafu A, Dessie A, Tamirat KS. 2019. Dietary diversity practice and associated factors among late adolescent girls in Tegede District High Schools, Northwest Ethiopia. *BMC Public Health*: 1-17.
- Deshpande N, Karva D, Agarkhedkar S, Deshpande S.2013. Prevalence of anemia in adolescent girls and its co-relation with demographic factors. *Int J Med Public Health.* 3:235–239.
- Dewey KG, Begum K. 2011. Long-term consequences of stunting in early life. *Matern Child Nutr.* 7(Suppl 3):5–18.
- [Kemenkes RI] Kementerian Kesehatan Republik Indonesia. 2014. Permenkes RI No 88 Tahun 2014 Tentang Standar TTDBagi Wanita Usia Subur dan Ibu Hamil. Jakarta: Kemenkes RI.
- Korkalo L, Erkkola M, Heinonen AE, Riitta F, Selvester K, Mutanen M. 2016. Associations of dietary diversity scores and micronutrient status in adolescent Mozambican girls. *Eur J Nutr.* 56:1179–1189.
- Khanam R, Nghiem HS, Rahman MM. 2011. The impact of childhood malnutrition on schooling: evidence from Bangladesh. *Journal of Biosocial Science.* 43:437–451
- Mengistu G, Azage M, Gutema H. 2019. Iron deficiency anemia among in-school adolescent girls in Rural Area of Bahir Dar City Administration, North West Ethiopia. *Hindawi*: 1-8.
- UNICEF, WHO, CDC. 2017. Iron & Folic Acid (IFA) Supplementation for Adolescent Girls and Women. Geneva: Participants Manual for Health Workers. . <https://www.unicef.org/ghana/media/1331/file/UN157895.pdf>.
- [USDA] US Department of Agriculture. 1992. The Food Guide Pyramid (Home and Garden Bulletin No. 252). Washington, DC: USDA.
- Victora CG, Adair L, Fall C, Hallal PC, Martorell R, Richter L, Sachdev HS. 2008. Maternal and child undernutrition: consequences for adult health and human capital. *Lancet* 371:340-357.
- [WHO] World Health Organization. 1994. Indicators and Strategies for Iron Deficiency and Anemia Programmes. Report of the WHO/UNICEF/UNU Consultation. Geneva: WHO.