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PREDISPOSING FACTORS PREVENTING ANEMIA BEHAVIOR IN ADOLESCENT GIRLS: CROSS SECTIONAL STUDY IN JAMBI PROVINCE

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ABSTRACT

Background: Anemia is a health problem throughout the world, especially in developing countries where it is estimated that 30% of the world's population suffers from anemia. Based on 2018 Basic Health Research (Riskesdas) data, the prevalence of anemia in teenage women in Indonesia is 32%. That means 3-4 out of 10 teenage daughters are suffering from anemia. Factors that worsen anemia in teenage daughters are lacking in substance intake.
Method: The aim of the research is to determine the analysis of preventive behavior factors and the incidence of anemia in adolescent girls. The research was carried out at 3 high schools in Jambi Province, namely at SMA Negeri 6 Jambi City, at a private vocational school Jambi Mother's Family and at the Saadatul Abadiyah Kuala Tungkal Islamic Boarding School, Jambi Province in June 2022. The sample for this study was 279 people . Data analysis used chi-square.
Result: The research results showed that 24.4% of young women suffered from anemia with an average Hb level of 10.5 mg/dl. The results of statistical analysis show a relationship between knowledge, peer *group support* and the role of health workers on the behavior of young women in preventing anemia. The test results show that there is a relationship between compliance in consuming Blood Supplement Tablets obtained from school and the incidence of anemia, while Body Mass Index (BMI) has no relationship.
Conclusion: It is hoped that schools, in collaboration with health workers, can provide education or health education, especially the prevention of anemia in young women, and hold joint discussions to discuss the problem of preventing anemia using information system technology such as electronic- based Anemia Prevention Education Model.

Keywords: Anemia; Adolescent Girls; Anemia Prevention Behavior

INTRODUCTION

Anemia is a condition of the body where the hemoglobin (Hb) level is lower than normal. Anemia in adolescent girls is still quite high, according to the World Health Organization (WHO) (2013), the prevalence of anemia in the world ranges from 40-88%. In Indonesia, the prevalence of anemia in adolescent girls is 75.9% (SDKI, 2012), while the 2012 Household Health Survey (SKRT) data, the prevalence of anemia in adolescent girls aged 10-18 years is 50.5%. Riskesdas data, in 2018 the proportion of 32 % of adolescent women (15-24 years) experienced anemia. In Indonesia, it is stated that 1 in 3 women suffer from anemia. Satriani 's research (2018), in Jeneponto Regency, of 200 female students, 74 (37%) had anemia.

Women of reproductive age (adolescent girls) have a higher risk of iron deficiency anemia during the menstrual cycle (WHO, 2011; McDanie, 2019). Another factor that worsens anemia in adolescent girls is a lack of iron intake, where iron in adolescent girls is really needed by the body to accelerate growth and development. Besides that, young women menstruate every month so they need more iron, while the amount of food they consume is lower than

men, due to the desire to be slim (Ministry of Health of the Republic of Indonesia, 2013). The volume of blood lost during the menstrual period of more than 80 ml occurs in adolescents who experience long menstrual periods (Wijiastuti, 2006) . Menstrual problems interfere with activities at school and daily activities (Chan. SSSC, at all, 2009).

Anemia causes fatigue quickly; decreased study concentration resulting in low learning achievement and can reduce work productivity. Anemia also reduces the body's immune system, putting you at risk of infection. The high prevalence of anemia among teenagers, if not handled properly, will continue into adulthood and contribute greatly to the increase in maternal mortality (MMR), risk of giving birth to babies with low birth weight (LBW) and stunting (Robertus, 2014: Ministry of Health, 2016).

Management of anemia can be carried out well if the risk factors associated with anemia can be identified early. WHO (2014), targets reducing the prevalence of anemia in women of childbearing age (WUS) by 50% by 2025. Following up on these recommendations, the Indonesian government is intensifying the prevention and control of anemia in adolescent girls (aged 12 – 18 years) and WUS by prioritizing giving 52 blood supplement tablets through school institutions every month throughout the year (Ministry of Health, 2016). Several studies have shown that supplementation with tablets containing 200 mg ferrous sulfate and 0.25 mg folic acid resulted in an increase in the average Hb in adolescent girls after being given treatment (Sari. A, et al, 2017; Sayogo, et al, 2000)

The government has made regulations regarding the priority of giving TTD to WUS to prevent the incidence of anemia, but the incidence of anemia is still high. This is proven by the percentage of TTD coverage for adolescent girls aged 10-19 nationally, namely 76.2 (SDKI, 2018). In Jambi Province, the coverage of providing TTD to adolescent girls aged 10-19 years is still below the national coverage, namely 71.62%, while in Jambi City it is lower than the coverage in Jambi Province, namely 67.88 % (Riskesdas Jambi Province 2018).

The problem of anemia in adolescent girls is caused by a lack of knowledge, attitudes and skills of adolescents due to lack of information, lack of concern from parents, society and the government regarding adolescent health . The causes of anemia in adolescent girls are mainly insufficient food intake, consuming enough food but the food has low iron bioavailability so that the amount of iron absorbed by the body is less. The Indonesian population's habit of consuming tea is also a factor that inhibits the proper absorption of iron (Noorkasiani, 2019). Adolescent girls tend to limit their food intake because they want to look slim. Teenage busyness can be a factor causing anemia in teenagers due to excessive activity and fatigue (Meiliana, 2018) . Malnutrition factors: Adolescents who have a lower BMI have a high risk of anemia. Yulia's research. EK (2019) in Rokan Hulu Regency, Riau, stated that respondents with a low body mass index (BMI) suffered from anemia at 91.3%. The research results concluded that there was a relationship between nutritional status and the incidence of anemia in adolescent girls.

METHODS

This research aims to analyze the causal factors and prevention behavior of anemia in adolescent girls. The research was carried out at 3 high schools in Jambi Province, namely at Public High School 6 in Jambi City, at the Bunda Family Private Vocational School in Jambi and at the Saadatul Abadiyah Kuala Tungkal Islamic Boarding School, Jambi Province. *Cross-sectional* analytical research method. The sample for this study consisted of 279 people (62 from SMA Negeri 8 Jambi City, 152 from the Private Vocational High School Bunda Jambi and 65 people from the

Saadatul Abadiyah Islamic Boarding School Kuala Tungkal) .

Data collection was carried out in May and June 2022 using a questionnaire, BMI data was obtained through measuring body height using *a microtomies* and weighing using a digital weight scale. Hemoglobin levels were obtained using *a hematology analyzer* examination by taking venous blood at the Technology Laboratory, Medical Laboratory, Health Polytechnic, Ministry of Health, Jambi and at KH District Hospital. Daud Arif Kuala Tungkal. The anemia threshold limit for hemoglobin levels in the blood is less than 12 g/dL (WHO, 20 19; Gandosoebrata, R. 2011). BMI is an index of a person's body weight in relation to height, which is determined by weighing weight in kilograms (Kg) with TB in meters ($m^{2)}$. Normal BMI is 18.5 – 25.0 (RI Ministry of Health, 2019). Consume Fe suplement regularly if young women consume Fe suplement 1 tablet every week or ≥ 52 tablets in one year. The research hypothesis is that there is a relationship between knowledge, peer influence, the role of health workers, BMI and compliance with consuming blood supplement tablets on the incidence of anemia in young women. Data analysis uses *Chi-square* with a confidence level of 95%.

RESULTS AND DISCUSSION

Research conducted on Young Women in 3 High Schools in Jambi Province in May and June 2022 with 279 respondents, is as follows.

Table 1. Characteristic respondents

Variable		n	Percentage
Age	< 17 years	270	96,7
	≥17 years	9	3.3
Tribes	Malay	664	22.9
	Java	558	20.7
	Batak	556	20
	Padang	559	21.1
	Buginese	228	10.3
	Banjar	114	5
Parents' job	ASN/ TNI/ POLRI/ BUMN	106	37.9
	Private	97	34.7
	Farmer	27	9.8
	Fisherman	11	3.9
	Laborer	38	13.7
		279	100

Table 1. shows that the majority (60%) of respondents are 15 years old, with an age range of 14 years to 17 years.

Table 2. Distribution of Anemia Incidence in Adolescent Girls

Variable	n	Percent	Average Hb Level (mg/dl)
Anemia	71	25 .4 %	10 .5
Normal	208	74.6 %	13 .1
	279	100.0%	

The table above shows that the incidence of anemia in adolescent girls is still high, namely 25.4%.

Table 3. Relationship between adolescent girls knowledge about anemia and anemia prevention behavior

Variable	Indicator	Prevention of Anemia				P-value
		Not enough		Good		
		n	%	n	%	
Knowledge about anemia	Not enough	150	68.6	219	31.4	0.004
	Good	13	21.4	60	78.6	

Based on table 3, it is known that the majority of respondents (78.5%) have insufficient knowledge about anemia in adolescent girls. Respondents with less knowledge had less anemia prevention behavior. From the results of the *chi-square* statistical test, it can be concluded that there is a significant relationship between adolescent girls' knowledge about anemia and anemia prevention behavior.

The results of the analysis of the relationship between female peer influence and anemia prevention behavior can be seen in the following table.

Based on table 3, it is known that the majority of respondents (63%) received less support for preventing anemia from their peers (peer *group).* Respondents who received less support from their peers showed a lack of anemia prevention behavior in young women. From the results of the *chi-square* statistical test , it can be concluded that there is a significant relationship between peer influence and anemia prevention behavior .

The results of the analysis of the relationship between the role of health workers and anemia prevention behavior can be seen in the following table:

Based on table 3, it is known that health workers play a role in preventing anemia in adolescent girls. The results of the *chi-square* statistical test concluded that there was a significant relationship between the role of health workers and anemia prevention behavior.

Apart from describing anemia prevention behavior in adolescent girls, the following can be seen the relationship between BMI and the incidence of anemia.

Table 4. Relationship between the incidence of anemia in adolescent girls based on BMI

Variable	BMI						P-value
	Thin	%	Normal	%	Fat	%	
Anemia	22	30.7	33	46.1	16	23.1	0.420
Normal	64	30.8	117	56.4	27	12.8	
Amount	86	30.8	150	53.8	43	15.4	

Table 4 shows that the majority of respondents (75.6%) had a normal BMI and did not suffer from anemia. The results of *the Anova* statistical test showed that there was no relationship between BMI and the incidence of anemia in adolescent girls.

Table 5. Relationship between adherence to taking blood supplement tablets (TTD) and the incidence of anemia

Variable	BMI						Q-value
	Thin	%	Normal	%	Fat	%	
Anemia	22	30.7	33	46.1	16	23.1	0.420
Normal	64	30.8	117	56.4	27	12.8	
Amount	86	30.8	150	53.8	43	15.4	

Table 5. concludes that the majority of respondents (84.8%) did not regularly consume TTD, and the incidence of anemia was more in the group who did not regularly consume TTD. The results of the *chi-square* statistical test concluded that there was a significant relationship between adherence to consuming TTD and the incidence of anemia in young women.

Research results show that the incidence of anemia in adolescent girls is 25.4% with an average Hb level of 10.5 mg/dl, below the national figure of 32% (Riskesdas, 2018), but this is still a health problem that must be addressed immediately. If prevention and control are not carried out, it can result in a decrease in the learning achievements of young women due to a decrease in their ability to concentrate on learning. Apart from that, it can reduce work productivity, reduce the body's resistance and put you at risk of infection. The high prevalence of anemia among adolescents, if not handled properly, will continue into adulthood and contribute greatly to the increase in maternal mortality (MMR), risk of giving birth to babies with low birth weight (LBW) and *stunting (Robertus*, 2014: *Ministry of Health, 2016).* The results of this study are in accordance with research by Noviyanti (2020) showing that the incidence of anemia in adolescent girls is 74.1% with an average of 9mg/dL.

Currently, the main prevention of anemia is by administering TTD regularly, 1 tablet every week throughout the year. Changing the behavior of young women is the most important thing in preventing anemia, for example the culture of consuming junk food is popular among young people, foods that are high in calories but relatively empty of important nutrients such as amino acids, vitamins, minerals and anti-oxidants (Jenkins, 2019).

Knowledge is the result of knowing from knowing, and this occurs after people sense a particular object. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste and touch. Most human knowledge is acquired through the eyes and ears . Good knowledge of disease is very important to achieve a better quality of life. Knowledge is a very important provision for the formation of one's actions. A person's actions reflect the knowledge they have, good knowledge will make someone have the provisions to treat themselves appropriately throughout their life. Good

understanding has the potential to make someone adhere to treatment (Notoatmodjo, 2010). Several studies state that there is a relationship between knowledge and the prevention of anemia in adolescent girls (Nesrin, N., 2021; Caturi, 2015; Lestari, 2018).

Based on the research results, there is a significant relationship between the influence of peers and the prevention of anemia in young women. The role of peers to support and remind other young women to regularly consume blood supplement tablets is very important. Increasing knowledge and information related to anemia and anemia prevention in adolescent girls by *peer groups*, teachers and parents is very important to implement so that adolescent girls can share this knowledge with their peers, so that more adolescent girls will regularly prevent anemia because they are motivated by habit. peers (Satrina, 2018).

Relationships with peers are individual relationships that involve relatively large amounts of closeness within the group (Laning, 2009). This shows that peers also function as a place to communicate so that changes in behavior often occur. This behavior can also be included in food consumption behavior. Apart from that, teenagers have a strong desire to be accepted and liked by their peers or their circle of friends, resulting in imitation of habits (Aisah, 2009). If their peers are regular in preventing anemia, it is hoped that young women will be motivated to follow their peers' behavior.

These results are in line with previous research which stated that there was a relationship between the environment and the prevention of anemia in adolescent girls. The environment in question is everyone around the young woman, such as parents, peers, neighbors who can encourage her to prevent anemia (Nurbaya, 2018).

According to previous research, teenagers spend more time outside the home with their peers as a group, so it is understandable that the influence of peers on attitudes, conversations, interests, appearance and behavior is very large. Therefore, the role of peers is very important, especially in changing behavior, as well as anemia prevention behavior (Nurbaiti, 2018).

Based on the research results, it was concluded that there was a significant relationship between the role of health workers and the prevention of anemia in japutri juveniles. It can be seen that most of the roles of health workers have not played an optimal role in preventing anemia because health workers rarely provide education about preventing anemia but the information provided is general and not specific so that many respondents still do not understand about preventing anemia. Sarinah's research results. S et al (2022), that educational interventions can prevent iron deficiency anemia in adolescent girls.

The research results are based on BMI with the incidence of anemia in adolescent girls with the highest percentage in the normal BMI category of 53.8 %. Nutritional status is the condition of the body as a result of consumption, absorption and use of nutrients or physiological conditions resulting from the availability of nutrients in the body. Nutritional status can be measured by BMI, thin, normal and obese. Several factors trigger nutritional problems in

adolescence, such as food intake, wrong eating habits, wrong understanding of nutrition, where a slim body becomes the dream of teenagers so that nutritional needs are not met and excessive preference for certain types of food, for example fast food (Nurhayati, 2020; Setyaningrum, 2014).

The incidence of anemia based on irregular consumption of blood supplement tablets (TTD) has an anemia percentage of 92.3%. Compliance with consuming iron supplementation or administering Fe tablets greatly influences changes in Hb levels, where hemoglobin levels are normal, anemia status will also be normal, so that it can prevent and treat anemia (Sarinah. S and Asnaily, 2021; Yuniarti, 2015; Citra, 2012). In accordance with research by Febrianti, et al, (2020), the results of the research show that teenagers who have strong behavioral control will be more likely to comply with TTD consumption compared to young women with weak behavioral control regarding TTD consumption. The research results prove that increasing knowledge is carried out through continuous health education regarding the importance of consuming TTD regularly.

CONCLUSION

The incidence of anemia in adolescent girls in 3 high schools in Jambi Province is 25%. There is a relationship between knowledge, peer influence and the role of health workers in preventing anemia in adolescent girls. The highest incidence of anemia (92.3%) was in the group of young women who did not regularly consume blood supplement tablets. The results of the analysis showed that there was a relationship between adherence to taking TTD and the incidence of anemia. Based on BMI, the highest incidence of anemia occurred in the normal BMI group at 53.8 %, followed by underweight BMI. The results of the analysis found no relationship between adolescent girls' BMI and the incidence of anemia. as much as 30.7% in young women.

It is important to provide education to prevent anemia in adolescent girls using methods that are more accessible, easy to use and can be implemented. The need for monitoring and monitoring adolescent girls' compliance in consuming TTD. The weakness of the research is that not all variables that influence anemia in adolescent girls were studied so that other factors could influence the results of this study. For example, diet, lifestyle, socio-economic status and others. The weakness of the research methodology is that this research uses a descriptive method so that it is not known for certain the cause of anemia in young women. Another weakness is the *cross-sectional research* method, preferably a prospective method so that the actual causal factors are clearly known.

REFERENCES

Aisah S. (2009). *The Influence of Peer Group Education on Behavioral Changes in Preventing Iron and Nutritional Anemia in Women of Childbearing Age in Semarang City.* Thesis. University of Indonesia.

Caturi, Yantining Tiyas, 2015. *The Relationship Between Knowledge, Attitudes and Behavior and the Incidence of Anemia in Adolescent Girls in Classes X and XI of SMA Negeri 1 Polokarto.*

Chan , Symphorosa SC Pm Yuen , Ka Wah Yiu , Daljit Singh Sahota . (2009). Menstrual Problems and health-seeking

behavior in Hong Kong Chinese girls . *Hong Kong Med J 2009;15:18-23* .

Citra Kesumasari. (2012). *Nutritional Anemia, Problems and Prevention.* Cet. 1 - Yogyakarta.

Febriyanti Diana, Farida Wahyu, and Ninna Rohmawati, (2020). *Compliance Behavior Consumption of Added Blood Tablets for Adolescent Girls in Jember, Indonesia.* Department of Public Health Nutrition, Faculty of Public Health, University of Jember.

Gandosoebrata, R. 2011. *Clinical Laboratory Guide.* Dian Rakyat: Jakarta.

Ian Jenkins and Aryeh Shande r. (2019). Anemia Prevention and Management Program Implementation Guide, Editors: Howard L. Corwin, Lawrence T. Goodnough, Benjamin Hohmuth, MD, MPH and Lisa Shieh

Republic of Indonesia Ministry of Health, (201 2). *Basic health research. http://www.depkes.go.id* ..

Republic of Indonesia Ministry of Health, 2013. *2013 Indonesian Health Profile*

Indonesian Ministry of Health, (2016). *Guidelines for Anemia Management in Adolescent Girls and Women of Childbearing Age (WUS) Directorate of Community Nutrition, Directorate General of Public Health,* Jakarta.

Indonesian Ministry of Health, (2019). *Body mass index classification. www.p2ptm.kemenkes.go.id*

Laning, Vina Dwi, 2009. *Dream Teenagers* . Cempaka Putih Publishers. Klaten.

Lestari, Desy Indah Nur, 2018. *Analysis of Factors Associated with Efforts to Prevent Anemia During Menstruation in Adolescent Girls at Islamic Boarding Schools in the Jenu Region, Tuban Regency.* .

McDaniel Jenny K. and Caryn E. Sorge 2019, *Anemia in the Young and Older Diagnosis and management,* Editor Robert T. Means. Jr, Springer Nature Switzerland AG https://doi.org/10.1007/978-3-319-96487-4

Meiliana, 2018. *Description of Anemia Risk Factors in Class X Adolescent Girls at SMAN 3 Tangerang Regency in 2018.*

Nesrin N. Abu-Baker A, Anwar M. Eyadat and Abdullah M. Khamaiseh, 2021, The impact of nutrition education on knowledge, attitude, and practice regarding iron deficiency anemia among female adolescent students in Jordan, Heliyon journal homepage: www.cell .com/heliyon

Noorkasiani, et al, 2019. *Sociology of Nursing* . EGC Medical Book Publishers. Jakarta.

Notoatmodjo, Soekidjo , 201 0 . *Health Research Methodology.* Publisher PT. Rineka Cipta. Jakarta.

Noviyanti, RD, & Kusudaryati. DPD 2018. Relationship between Breakfast Habits and Nutritional Status of Muhammadiyah Elementary School Students, Special Program in Surakarta. Journal of the University Research Colloqurium

Nurbaiti, 2018. *Factors Associated with Preventing Anemia in Adolescent Girls at SMA Negeri 4 Jambi City.* Volume 19, Number 1, February 2019, (Pages 84-88)

Nurhayati, Qariati, NI, & Jalpi, A. 2020. The relationship between knowledge, breakfast habits and physical activity with the incidence of anemia in young women at MAN 1 Banjarmasin in 2020. Faculty of Public Health, Kalimantan Islamic University

Ruqoiyah Siti. (2019). The Relationship between Compliance with Blood Added Tambelt Consumption and *the Incidence of Anemia in Class*

Sarwono, Sarlito, 2010. *Adolescent Psychology* . Salemba Medika Publisher. Jakarta.

Sarinah Siregar, Asni Johari, M. Rusdi and Sahrial. 2022. The Impact of Health Education on Knowledge, Attitude, Practice, And Prevention of Iron Deficiency Anemia Among Adolescent Females: A Systematic Review. NSC NURSING , Volume 4, Nr.1, pp. 1-22 https://www.nscnursing.it/napolisana-campania/nsc-nursing/anno-di-pubblicazione-2022/

Sarinah Siregar and Asnaily. (2021). Empowerment of Cadres in Preventing

Anemia in Adolescent Girls. *Martabe: Journal of Community Service*. Volume 5 Number 3 of 2022. http://jur nal.um-tapsel.ac.id/index.php/martabe/article/view/6193

Satrina. (2018). *Analysis of Determinants of Anemia in Adolescent Girls (15-18 Years) in Tamalate District, Jeneponto Regency. Thesis.* Hasanuddin University Makassar.

Setiyaningrum E, Zulfa. 2014. *Family planning and reproductive health services.* Jakarta: CV. trans media info.

Setyowati, Nanik Dewi, 2017. *Factors Associated with Eating Behavior of Adolescent Girls in Preventing Anemia in the Working Area of the Ngemplak Simongan Community Health Center*. PUBLIC HEALTH JOURNAL (e-Journal) Volume 5, Number 5, October 2017 (ISSN: 2356-3346)

SDKI. (2018). *2018 Indonesian Demographic and Health Survey Adolescent Reproductive Health.* Indonesian Ministry of Health .

WHO. (2014). Global Nutrition Targets 2025: Anemia Policy Brief Geneva: WHO; *2014. https://apps.who.int/iris/bitstream/handle/10665/148556/WHO_NMH_NHD_14.4_eng.pdf?ua=1 . .*

WHO. (2019). Hemoglobin concentrations for the diagnosis of anemia and assessment of *severity. Vitamin and Mineral Nutrition Information System [Internet]. Geneva (Switzerland): WHO; 2011. (WHO/NMH/NHD/MNM/11.1.) [cited 2019 November 15]. Available from: http://www.who.int/vmnis/indicators/haemoglobin.pdf* .

WHO. *The global prevalence of anemia in 2011*. Geneva: World Health Organization. *http://www.who.int*

Yuli Eka Handayani and Ziska Rumiati, (2019). *The Relationship between Adolescent Nutritional Status and the Incidence of Anemia in Adolescent Girls at SMP N 02 Rambah Hirilir, Rokan Hulu Regency.*