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Factor Related With the Anemia Incidence Of Adolescent Girl in Private High School Santa Lusia Medan, 2019

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A B S T R A C T

According to data Basic Healt Research (Riskesdas) in 2016, as many as 22,7% women of reproductive age more than 15 years indicate anemia. Anemia that often occurs is iron deficiency anemia, the incidence reaches 50% of the total anemia. There is a significant relationship between nutritional status and incidence of anemia in adolescent.

This study was an observational analytic with a cross sectional approach. This study was conducted in private high school Santa Lusia Medan. The population of this study were adolescent girl with a total sample 74 using total sampling technique. The research material in the form scales and height measurements to measure boddy mass index, quesioner for iron consumption patterns and consumption habits of Fe tablet and hemoglobin levels were examined using haemometer digital. Data analysis used chi square test (α=0,005).

The results of the research are variabels related to anemia incidence are body mass index (*sig*=0,019),iron consumption patterns (*sig*=0,017), Fe tablet consumption habit (*sig*=0,045). Conclusion this study is factor causing anemia in adolescent girls is the pattern of iron consumption. Adolescent girl who have irreguler iron consumption pattern have an oppurtunity to experience anemia of 4,250 compared to adolescent girl who have reguler iron consumption patterns.

I. INTRODUCTION

Reproductive health problem have a very broad scope. Reproductive health issues are related at all levels of women's lives. Because of complex reproductive health problem, the government of Republic Indonesia in this case Depertemen Kesehatan implements reproductive health services by prioritizing the four components of reproductive health which are the main problem in Indonesia which are called Pelayanan Kesehatan Reproduksi Esensial (PKRE) specifically Maternal and newborn health, Family Planning, Adolescent reproductive health, handling reproductive tract infections including HIV/AIDS. Whereas Pelayanan

Kesehatan Reproduksi Komprehensif (PKRK) consists of PKRE plus reproductive health in old age.

Indonesian adolescents constitute the largest age group compared to other age groups. Acording to data BPS 2016, the proportion of adolescents 10-19 year is 17,48%. Seen from the state oh helath by data Riskesdas 2013 indicate 22,7% women of reproductive age more than 15 years experience anemia. Adolescents and women of reproductive age are the group most at risk of developing anemia due to menstruation and pregnancy. Anemia that often occurs is iron deficiency anemia, the incidence reaches 50% of the total anemia.

There is a significant relationship between nutritional status and the incidence of anemia in adolescent (Wibowo, 2012). Nutritional needs that are not met, especially iron, cause a reduction in the formation of red blood cells so that red blood cells can not perform its function, namely transferring oxygen, resulting anemia. Sirait, AL (2015) in his research states that there is a relationship between the level of iron consumption with the incidence of anemia in adolescent girls in junior high school 1 Surakarta. There is a significant relationship between compliance with consumption of Fe tablets with anemia in MTsN 02 Bengkulu City (Putri RD, et al, 2017)

Eating habits obtained during adolescence will have an impact on health in the next phase of life. Iron deficiency can cause anemia and excess teenagers need more iron and women need more to replace the iron lost during menstruation. Iron needs in adolescent aged 12 to 18 years is 31 to 33 mg/day and normal haemoglobin levels for ages 12 to 18 in adolescent girl which is 12 gr/dl. Iron needs increased in adolescents because of the increased growth and expansion of blood volume and muscle mass. The role of iron is important for transporting oxygen in the body and other roles in the formation of red blood cells. Therefore menstruating teens need a higher level of iron.

The health and nutritional status of adolescent needs attention because adolescent girl will become mothers for the next generation. Adolescent girl who experience anemia in adolscence will be at risk of giving birth to babies with low birth weight and stunting. There are several symptoms of anemia that are often experienced by adolescents while at school, among them lethargic, tired weak, often faint and quickly forget. Some of these symptoms occur among teenagers in the private high school Santa Lusia Medan.

II. METHODS

This study was an observational analytic study with a cross sectional approach. This study was conducted in private high school Santa Lusia Medan. The population of this study were adolescent girl class X and XI with a total sample of 74 using total sampling technique. The research material in the form of scales and height measurements to measure boddy mass index, quesioner for iron consumption patterns and consumption habits of Fe tablets and hemoglobin levels were examined using a haemometer digital. Body Mass index is calculated using formula BMI = $\frac{BB}{TB^2}$. Normal category if BMI <25,0 and abnormal if BMI ≥ 25,0. Iron consumption patterns obtained from collecting food recall questionnaires filled out by respondents for one week. For iron consumption patterns variabel, the category Irreguler if the recall food questionnaire found that respondents did not consume iron sources every day for a week. Reguler category if the recall food questionnaire found that respondents consume iron sources every day for a week. For consumption habits of Fe, the category Irreguler not consume one tablet Fe every week for one month. Category reguler if adolescent girl consume one tablet Fe every week for one month. Anemia category if the hemoglobin level is <12,0 gr/dl and normal category if the hemoglobin level is ≥ 12 gr/dl.Examination of hemoglobin levels in adolescent girls is not

performed an adolescent girls who are menstruating. The examination is done one week after menstruation has finished. Data analysis used chi square test (α=0,005).

III. RESULT

Table 1. Frequency Distribution of Characteristics of Respondents by Body Mass Index, Iron Consumption Pattern, Fe Tablet Consumption Pattern, Hemoglobin Levels Adolescent Girl's in the private high school Santa Lusia Medan

Variabel	Frequency	(%)
BodyMass Index		
Abnormal	20	73
Normal	54	27
Total	74	100
Iron Consumption Pattern		
Irregular	36	49
Regular	38	51
Total	74	100
Fe Tablet Consumption Habit		
Irregular	44	59
Regular	30	41
Total	74	100
Hemoglobin Levels		
Anemia	16	22
Normal	58	78
Total	74	100

Table 2. Cross Tabulation Between Factors That Influence Hemoglobin Levels Adolescent Girl's in the private high school Santa Lusia Medan

Variabel	Hemoglobin Levels				sig	PR
	Anemia		Normal			
	Total	%	Total	%		
BodyMass Index						
Abnormal	8	11	46	62	0,019	0,024
Normal	8	11	12	16		
Total	16	22	58	78		
Iron Consumption Pattern						
Irregular	12	16	24	32	0,017	4,250
Regular	4	6	34	46		
Total	16	22	58	78		
Fe Tablet Consumption Habit						
Irregular	13	18	31	42	0,045	3,774
Regular	3	4	27	36		
Total	16	22	58	78		

IV. DISCUSSION

From table 2 it can be seen that the results of bivariate analysis show there is a relationship between body mass index and hemoglobin levels (*sig*=0,019) and based on the risk estimate test the Prevalance Ratio (PR) is 0,024. This means that adolescent girl who have a abnormal BMI have a chance to experience anemia of 0,024 times compared to adolescent girl who have normal BMI.

Lee, B.J and Kim, J.Y (2016), In Their study, BMI was determined to be one of the best predictors of low and normal hemoglobin levels.Severalstudies have suggested that anemia and the hemoglobin level are related to an increased BMI, a low activity level, an increased age, a low albumin level, a high creatinine level, stroke, gastric ulcers, low triglycerides, and malignant disease. In Korea, Choi and colleagues conducted a prospective study to examine the clinical characteristics of anemia in older Koreans and reported that the independentrisk factors included an older age, a low BMI, a low albumin level, a higher creatinine level, and the female gender. Their results are consistent with those of previous studies. In their study, BMI was determined to be one of the best predictors of low and normal hemoglobin levels. In China, Qin and colleagues observed that females with abdominal obesity were less likely than those with normal weight to have a low hemoglobin level; they also found that obese females with a high BMI had a higher hemoglobin level than underweight, normal and overweight females.

There is a relationship between iron consumption patterns with the incidence of anemia (*sig*=0,017) and based on the risk estimate test, Prevalance Ratio (PR) is 4,250. This means that adolescent girl who have irreguler iron consumption pattern have an oppurtunity to experience anemia of 4,250 compared to adolescent girl who have reguler iron consumption patterns. Adolescent girl is very concerned about his appearance. They will avoid foods made from meat and prefer foods made from vegetables and Fruit.

A number of recommendations by public health authorities designate that meat and processed meat products intake should be limited. But, in this regard, as they represent the best haem iron dietary source, a compromise should be reached. According to Hercberg et al., haem iron in haemoglobin and myoglobin in meat, poultry, and fish usually constitutes only 10% or less of the total iron intake in European mixed diets, but the average absorption of haem iron is usually around 25% (but may vary from about 10% to 40%). The authors find that non-haem iron in cereals, vegetables, fruits, roots, pulses and beans constitutes the main part of dietary iron, although its bioavailability is low (1% ± 5%).Results obtained in the ENIDE dietary survey in Spain showed that the higher percentage of iron contribution was from legumes and seeds (23%), with fish and shellfish and meat and meat products being second (19%) and third (16%), respectively. Noteworthy, cereal and grain products were the fourth iron source, accounting for 11% of total intakes. It is important to acknowledge that there are a number of factors that affect iron absorption into the gastrointestinal system and thus iron bioavailability: calcium, phytates in cereals and legumes, and phenolic compounds found in tea, coffee, and other beverages bind iron and restrict its availability for absorption, while meat and vitamin C found in fruit and vegetables enhance the potential availability of iron for mucosal uptake. The fact that between 6.7% and 14.7% of total dietary iron comes from the vegetable group indicates that vitamin C from this sources is potentially also consumed, although more information is required on iron absorption enhancers and inhibitors. (Vaesken, et al, 2017)

There is a relationship between Fe tablet consumption habit with the incidence of anemia (*sig*=0,045) and based on the risk estimate test, Prevalance Ratio (PR) is 3,774. This means that adolescent girl who have irreguler Fe tablet consumption habit have an oppurtunity to

experience anemia of 3,774 compared to adolescent girl who have reguler Fe tablet consumption habits.

Fe tablets are supplements containing iron. Iron is one of the main elements in the formation of hemoglobin which functions to carry oxygen throught the body. Fe tablets should be consumed after eating and drinking Fe tablets are not recomended together with supplements containing calcium or high calcium milk, cofee, and tea. Because iron absorption will be disrupted. Putri, R.D, dkk (2017), In her research states that the dominan factor in anemia in adolescent girl is poor adherence to the consumption of Fe tablets. As recomended, adolescent girl should cnsume one tablet of Fe tablets every week. This recommendation is for adolescent girl ages 12-18. Fe tablets is programmed through UKS (Usaha Kesehatan Sekolah) in school by determining the day of drinking Fe tablets together every week. But, if there is severe anemia the dose can be increased to two tablets in one week. Fe tablet consumed must contain 60 mg of elemental iron and 400 micrograms of folic acid. According to Risva, et al (2016), giving Fe tablets 2 times/week for eleven weeks can increase hemoglobin levels in the blood by 2,28 gr/dl. In this school, this program has not yet been implemented. So the majority og adolescent girl do not regularly consume Fe tablet.

V. CONCLUSION

The conclusions from the result of this research is that 22% of adolescent girls experience anemia in private high school Santa Lusia Medan. It is estimated, the contributing factor consist of body mass index (*sig*=0,019), iron consumption patterns with the incidence of anemia (*sig*=0,017), and Fe tablet consumption habit (*sig*=0,045). It is estimated that the most dominant factor causing anemia in adolescent girls is the pattern of iron consumption. Adolescent girl who have irreguler iron consumption pattern have an oppurtunity to experience anemia of 4,250 compared to adolescent girl who have reguler iron consumption patterns. Due to the cross-sectional design of this study, the causal relationship between BMI, iron consumption pattern, and Fe tablet consumption habits could not be assessed.

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BIOGRAPHY

Risda Mariana Manik, is lecturer in the diploma midwifery STIKes Santa Elisabeth Medan. She has had a career in education since 2009 and completed magister studies in 2018 at University North Sumatera, Public Health Faculty. She disciplines herself to routinely conduct research and publish the results of his research in accredited journals. The research she does is about women's reproductive health from adolescents, including planning for pregnancy to menopause

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