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Risk Factor Determination Of Anemia Event In Adolescent Princess In The Working Area Of Puskesmas Kota Selatan

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Abstrak

Anemia adalah masalah kesehatan masyarakat global yang perlu perhatian khusus. Anemia pada remaja putri merupakan masalah yang umum dijumpai terutama dinegara-negara berkembang (WHO, 2008). Anemia merupakan masalah kesehatan yang paling sering dijumpai dinegara-negara maju maupun berkembang termasuk Indonesia.. Prevalensi anemia di Indonesia tidak begitu jauh dengan angka prevalensi anemia global tersebut yaitu sebesar 21,7% dimana prevalensi kejadian anemia tersebut sudah masuk ke dalam kategori masalah kesehatan masyarakat sedang sehingga hal ini harus mendapat perhatian khusus. Remaja adalah kelompok usia yang sangat beresiko terhadap kejadian anemia karena kebutuhan gizi khususnya zat besi melebihi kebutuhan kelompok usia lain akibat percepatan pertumbuhan dan peningkatan aktivitas fisik yang dilakukan. Penelitian ini bertujuan untuk mengetahui faktor yang berhubungan dengan kejadian anemia pada remaja putri di wilayah kerja Puskesmas Kota Selatan Kota Gorontalo. Jenis penelitian dengan crosssectional dengan menggunakan uji bivariat dengan uji chi square dan uji multivariate dengan regresi logistic. Instrument penelitian ini menggunakan kusioner. Hasil penelitian ini menunjukkan bahwa terdapat hubungan antara umur menarche (p=0,001), pengetahuan (p=0,000), pendidikan ibu (p=0,000), pola haid (p=0,000), IMT (p=0,009), menstruasi (p=0,003). Faktor yang paling dominan terhadap kejadian anemia pada remaja putri di wilayah kerja Puskesmas Kota Selatan Kota Gorontalo adalah faktor pengetahuan dengan nilai p value 0,001 exp B= 2,650 (CI 1,643-4770) yang artinya responden yang memiliki pengetahuan baik akan berpeluang 2,6 kali lebih besar dapat mencegah anemia yang dikontrol oleh variable pola haid, umur menstruasi dan pendidikan ibu.

Kata Kunci : *anemia; remaja putri; faktor risiko*

Abstract

Anemia is a global public health problem that needs special attention. Anemia in adolescent girls is a common problem, especially in developing countries (WHO, 2008). Anemia is a health problem that is most often found in developed and developing countries, including Indonesia. The prevalence of anemia in Indonesia is not so far from the global anemia prevalence rate, which is 21.7%, where the prevalence of anemia has entered the category of public health problems. moderate so this should receive special attention. Adolescents are an age group that is very at risk of anemia because nutritional needs, especially iron, exceed the needs of other age groups due to accelerated growth and increased physical activity. This study aims to determine the factors associated with the incidence of anemia in adolescent girls in the working area of Puskesmas Kota Selatan, Gorontalo City. This type of research is cross-sectional using the bivariate test with the chi square test and the multivariate test with logistic regression. The research instrument used a questionnaire. The results of this study indicate that there is a relationship between age at menarche (p = 0.001), knowledge (p = 0.000), maternal education (p = 0.000), menstrual pattern

(p = 0.000), BMI (p = 0.009), menstruation (p = 0.003). The most dominant factor for the incidence of anemia in adolescent girls in the work area of Puskesmas Kota Selatan Kota Gorontalo is the knowledge factor with a p value of 0.001 exp B = 2,650 (CI 1.643-4770) which means that respondents who have good knowledge will have a chance of 2.6 times more. can prevent anemia which is controlled by variable menstrual patterns, menstrual age and mother's education.

Keywords : *anemia; young women; risk factors*

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INTRODUCTION

Anemia is one of the main nutritional problems in Asia, including Indonesia. Among school age children, the highest prevalence of anemia is found in Southeast Asia, with an estimated 60% of children experiencing anemia (1). Anemia is a condition in which hemoglobin (Hb) levels in the blood are lower than normal values (2). Anemia is very high (range between 80-90%) in preschool children, adolescents, pregnant and lactating women. In India 55.8% of adolescents aged 15-19 are reported to be anemic (3).

Based on data from the World Health Organization (WHO), the prevalence of anemia in Indonesia in 2006 in nonpregnant / productive women was 33.1%. Meanwhile, according to Dyah (2011), 57.1% of the prevalence of anemia in Indonesia affects young women (4). Based on the 2013 Riskedas data, it shows that the prevalence of anemia in Indonesia is 21.7%, with anemia sufferers aged 5-14 years of 26.4% and 18.4% of patients aged 15-24 years. The prevalence of adolescent girls experiencing anemia in 2013, namely 37.1%, has increased to 48.9% in Riskesdas 2018 with the proportion of anemia in the age group 15-24 years and 25-34 years (5). Result. This data shows that young women are one of the groups prone to suffering from anemia (6). This is one of the problems in growth in adolescence that can disrupt the quality of the population is anemia.

Adolescence is defined by the WHO as a period of life that includes ages between 10 and 19 years. This is a vulnerable period in the human life cycle for the development of nutritional anemia, which is continually neglected by public health programs. Anemia is a condition in which the number of red blood cells is not sufficient to meet the physiological needs of the body. Adolescents especially girls are affected by iron deficiency due to low intake and absorption of iron and increased iron requirements for growth and replacement of menstrual blood loss (7).

When young women experience menstruation for the first time, they need more iron to replace the loss caused by menstruation. The amount of iron loss during one menstrual cycle (about 28 days) is approximately 0.56 mg per day. This amount is supplemented by a basal loss of 0.8 mg per day. So that the total amount of iron lost is 1.36 mg per day. Anemiabroadly defined as conditions associated with lower than normal hemoglobin concentrations, anemia impairs circulating oxygen in the blood, which in turn has detrimental effects on maternal and childbirth outcomes, suboptimal child growth, learning disabilities, and decreased work productivity and income earning over time (8). Anemia in adolescents can have a negative impact on

adolescents, anemia that occurs can cause decreased reproductive health, motor, mental development, inhibited intelligence, decreased learning achievement, decreased fitness levels, and not achieving maximum height (9). Anemia has a negative impact on adolescents, which can cause the impact of delayed physical growth, behavioral and emotional disorders. This can affect the process of growth and development of brain cells so that it can have an impact on decreased immunity, weakness and hunger, impaired learning concentration, decreased learning achievement and can result in low work productivity. The four symptoms that are often experienced include lethargy, weakness, dizziness, lightheaded eyes, and pale face (10). In addition, adolescents suffering from anemia experience a decrease in fitness, which will hinder their sports performance and productivity. Lack of micronutrients during adolescence can have a negative impact on the growth and maturity of the reproductive organs (11).

The 2015 SKRT morbidity study collected data on risk factors including smoking, alcoholic drinks, breakfast habits, use of time for physical activity, anthropometric measurement results and hemoglobin levels. This article presents the results of the 2015 SKRT analysis with the aim of knowing the factors that influence anemia in adolescents.

Based on the results of research conducted by Yulianingsih at all 2018, it was found that 44 female adolescents with anemia were found in State Junior High Schools in the working area of the South City Health Center. Based on previous survey data, researchers are interested in conducting research on risk factors for anemia in young women in the working area of the South City Health Center.

This study aims to determine the most determinant factors for the incidence of anemia in adolescent girls in the working area of Puskesmas Kota Selatan, Gorontalo City.

MATERIALS AND METHODS

This type of research is cross-sectional with bivariate analysis using chi square and multivariate analysis using logistic regression. The variables in this study are factors that influence the incidence of anemia in adolescent girls. The research instrument used a questionnaire. The population in this study were all students of class VII of State Junior High Schools in the Puskemas Region of South City, Gorontalo City, totaling 1049 people. The consideration of determining the population of class VII is because adolescents at that age are in intellectual development and want to know new things so that unhealthy behavior appears. Based on the total number of samples desired, as many as 306 people. The sampling technique used multistage sampling.

RESULTS AND DISCUSSIONS

The relationship between the age of menarche in young women and the incidence of anemia

Based on the results of statistical tests in Table 1, it is obtained that the value of p = 0.001 <α 0.05, it can be concluded that there is a very significant relationship between the age of menarche and the incidence of anemia among respondents in SMP Negeri the working area of Puskemas, South City. Judging from the OR value, it shows that respondents with abnormal menarche age have a 2.2 times greater chance of experiencing anemia than respondents with normal menarche age.

The results of this study found that there were 60 respondents who experienced abnormal menarche age and anemia. This can be related to the nutritional status of the respondents. The age of menarche in the normal category is menarche experienced by respondents between the ages of 11-13 years. According to Saifuddin (2009), the age of teenage girls when having menstruation for the first time (menarche) has a wide variation, but the average is 12.5 years. The

Table 1. The relationship between the age of menarche in young women and the incidence of anemia

Age Menarche	The occurrence of anemia						P value	OR (95% CI)
	Anemia		No anemia		Total			
	N	%	n	%	N	%		
Abnormal	60	19.6	84	27.5	144	47.1	P = 0.001	2,253 (1,871-3,675)
Normal	39	12.7	123	40.2	162	52.9 s		
Total	99	32.4	207	67.6	306	100		

age of menarche in adolescent girls tends to accelerate over the last 100 years (12).

Puberty is a part of adolescence where there is more emphasis on biological processes that lead to the ability to reproduce (13). According to Wong (2009: 585) puberty is a process of hormonal maturity and growth that occurs when the reproductive organs begin to function and secondary sex characteristics begin to appear. Young women need more iron than young men, because young women experience menstruation every month (14).

The prevalence of anemia in young women is quite large because in adolescence there is a rapid growth (growth spurt). During the adolescent period, bone mass increases and bone remodeling occurs; soft tissue, organs, and even the mass of red blood cells increase in size. This growth causes the need for iron to increase dramatically and it is during adolescence that the need for nutrients reaches their highest point (15).

The results of this study are supported by research conducted by Amaliah (2010) regarding the relationship between nutritional status and menarche status in adolescents, namely nutritional status has a significant relationship with menarche status, namely adolescents with ≥ normal nutritional status will have a 1.940 times more chance of experiencing menarche than adolescents with abnormal nutritional status (16).

According to Manuaba (1998), as the peak of maturity, women begin to experience the first uterine bleeding called menarche, while men ejaculate during sleep (wet dreams). Adolescent puberty characterized by the age of menarche occurs more quickly. This occurs due to improved nutritional status and reduced infectious diseases (17).

The Relationship between Knowledge about Anemia and Anemia

Based on the results of statistical tests in Table 2, it was found that the value of p = 0.000 <α 0.05, it can be concluded that there was a very significant relationship between knowledge of anemia and the incidence of anemia among respondents in SMP Negeri, Puskesmas Kota Selatan work area. Judging from the OR value, it shows that respondents with less knowledge are 2.8 times more likely to experience anemia than respondents with good knowledge.

The results of the study on the knowledge variable of anemia with the incidence of anemia showed that there were 60 respondents who had good knowledge who experienced anemia, and there were 39 respondents who had poor knowledge who experienced anemia.

The results of this study are in line with research conducted by Mularsih (2017) concerning the relationship between knowledge of young women about anemia and anemia prevention behavior during menstruation at SMA Nusa Bhakti, Semarang City, it was found that there was a significant relationship between knowledge about anemia and anemia prevention behavior in adolescents (18).

Knowledge or cognitive is a very important domain in shaping one's actions. From experience

Table 2. Knowledge Relationship with Anemia

Anemia Knowledge	The occurrence of anemia						P value	OR (95% CI)
	Anemia		No anemia		Total			
	N	%	n	%	N	%		
Less	39	12.7	39	12.7	78	25.5	P = 0,000	2,800 (1,643-4,770)
Well	60	19.6	168	54.9	228	74.5		
Total	99	32.4	207	67.6	306	100		

and research it is proven that behavior based on knowledge is more durable than behavior that is not based on knowledge (19). According to the researchers' assumptions, the lack of information received by adolescents leads to incomplete adolescent knowledge and leads to wrong perceptions about anemia. So it is needed information about anemia that involves the school in PIK KR activities, peers and the media are the providers of information that can influence someone through the message conveyed. The more sources of information that students receive about the incidence of anemia, the better the knowledge of these students.

a. Relationship between maternal education and anemia

Based on the results of statistical tests in Table 3, it was obtained that the value of p = 0.000 <α 0.05, it can be concluded that there is a very significant relationship between maternal education and the incidence of anemia among respondents in SMP Negeri the working area of Puskesmas Kota Selatan, Gorontalo City. Judging from the OR value, it shows that respondents who have low maternal education are 0.3 times more likely to experience anemia than those who have high education.

The results of the study on the variable maternal education with anemia showed that there were 54 students who had low maternal education who experienced anemia, and there were 45 students who had higher education who experienced anemia. A person's education level affects individual behavior. The higher a person's health education or knowledge, the higher the awareness to participate in and maintain health and vice versa. With high education, it is hoped that the level of maternal knowledge will also be higher, mothers with higher education will more easily absorb information about maternal health and nutrition than mothers with low education. Good mother's knowledge about the preparation of family diet,

The results of this study are supported by research conducted by Shraddha (2018) on the prevalence of anemia and its associated factors among school adolescent girls in Baglung municipality, Nepal, that there is a relationship between parental education and the incidence of anemia (7).This study is in line with the results of research conducted by Basith (2017) regarding the factors associated with the incidence of anemia in adolescent girls, that there is a significant relationship between maternal education and the incidence of anemia in adolescents with a value of p = 0.000 (20).

b. The Relationship between Menstrual Pattern and Anemia

Based on the results of statistical tests I Table 4, it was obtained that the value of p = 0.000 <α 0.05, it can be concluded that there was a very significant relationship between menstrual patterns and the incidence of anemia in junior high school students in Gorontalo City. Judging from the OR value, it shows that students who have irregular menstrual patterns have a 0.3 times greater chance of experiencing anemia than students who have good knowledge.

Table 3. Maternal Educational Relations with the incidence of anemia

Mother's Education	The occurrence of anemia						P value	OR (95% CI)
	Anemia		No anemia		Total			
	N	%	n	%	N	%		
Low	54	17.6	159	52.0	213	69.6	0,000	0.362
High	45	14.7	48	15.7	93	30.4		0.217-0.604
Total	99	32.4	207	67.6	306	100		

Table 4. The Relationship between Menstrual Patterns and the Incidence of Anemia

Menstrual Pattern	The occurrence of anemia						P value	OR (95% CI)
	Anemia		No anemia		Total			
	N	%	n	%	N	%		
Regular	48	15.7	150	49.0	198	64.7	0,000	0.362
Irregular	51	16.7	57	18.6	108	35.3		1,699-4,602
Total	99	32.4	207	67.6	306	100		

Based on the research results in the Table 4, it was found that there were 51 respondents who had irregular menstruation experienced anemia and there were 48 who had regular menstrual patterns experienced anemia, the menstrual patterns seen in this study included the cycle and volume of blood that came out during menstruation. This can affect the incidence of anemia.

The menstrual pattern experienced by each young woman is different. Around the age of menarche until the age of 18 years, the possibility of irregular menstruation. Irregular menstruation shows that the hypothalamus-pituitary-ovarian axis is not yet complete. The release of eggs (ovum) only occurs once per month, which is around day 14 of the normal 28-day menstrual cycle (21). According to Benson (2009: 56-58) in anovulatory cycle the sequence of stages changes by variations in estrogen levels alone. Excessive stimulation results in the amount of this bleeding is usually more than normal menstruation (ovulatory) otherwise lack of estrogen causes less bleeding and the amount of blood lost is less (14).

This research is in line with research conducted by Shraddha et al 2018 concerning the prevalence of anemia and related factors among school girls in the city of Baglung, Nepal, it was found that irregular menstrual patterns have the potential to experience anemia (7). In addition, research conducted by Jaelani et al (2017) regarding the Risk Factors Associated with the Incidence of Anemia in Adolescent Girls found that there was a relationship between menstrual patterns and anemia in adolescent girls with a value of p = 0.0028 (22).

c. Relationship between food intake and anemia

Based on the results of statistical tests in Table 5, it was obtained that the value of p = 0.745 <α 0.05, it can be concluded that there was no significant relationship between food intake and the incidence of anemia in respondents at the SMP Negeri in the working area of Puskemas, South City, Gorontalo City.

According to the researchers' assumptions, this can be caused by several factors, namely eating habits as adolescents can affect health in the next life (after adulthood and old age). Food consumption patterns that are often irregular, frequent snacks, often don't have breakfast, and don't eat lunch at all. These conditions, coupled with the habit of consuming drinks that inhibit iron absorption, will affect hemoglobin levels.

Based on the physical aspect, nutritional status greatly affects the quality of human

Table 5. Relationship between Food Intake and Incidence Anemia

Food supply	The occurrence of anemia						P value	OR (95% CI)
	Anemia		No anemia		Total			
	N	%	n	%	N	%		
Not everyday	54	17.6	117	38.2	171	55.9	0.745	0.923 (0.570-1,494)
Every day	45	14.7	90	29.4	135	44.1		
Total	99	32.4	207	67.6	306	100		

life, height and weight of Indonesian people are largely determined by nutritional status. Meanwhile, nutritional status is influenced by various factors that are complexly interrelated with one another. These factors include the availability of foodstuffs, health status, economic status, and socio-culture. Nutritional status is determined by two components, including the fulfillment of all the nutrients the body needs from food and the role of various factors that determine the amount of nutrient absorption and use requirements for genetic and socio-economic factors (23).

Nutritional needs for adolescents, especially junior high school girls. In adolescents snacks contribute 30% or more of the total daily calorie intake of adolescents. But these snacks are often high in fat, sugar and sodium and can increase the risk of obesity and dental caries. Therefore, teenagers should be encouraged to choose healthy snacks. For adolescents, food is a basic requirement for growth and development of their bodies. Lack of food consumption, both qualitatively and quantitatively, will disrupt the body's metabolism (24).

The results of this study found that there were 54 respondents whose food intake was not consumed every day and experienced anemia, while there were 45 respondents whose food intake was consumed every day and experienced the incidence of amenia. Based on the results of research on food intake, there are respondents who consume foods that contain ingredients that can inhibit iron absorption, besides that, the results of the study also found that adolescents consume food intake without knowing how much they should consume.

Young women are one of the groups that are prone to suffering from anemia. Girls are at a higher risk of developing anemia than boys because the first reason is that girls experience menstrual cycles every month and the second reason is because they have wrong eating habits, this happens because young women want to be slim to maintain their appearance so that they diet and eat. reduce eating, but a diet that is carried out is a diet that is not balanced with the body's needs so that it can cause the body to lack essential substances such as iron (25).

d. Relationship between BMI and Anemia

Based on the results of the statistical test Table 6, it was obtained that the value of p = 0.009 <α 0.05, it can be concluded that there is a very significant relationship between body mass index and the incidence of anemia in respondents in SMP Negeri the working area of Puskesmas Kota Selatan, Gorontalo City. Judging from the OR value, it shows that students who have an abnormal body mass index are 0.5 times more likely to experience anemia than students who have a normal body mass index.

The results of this study found that there were 34 respondents with abnormal BMI and anemia, and there were 65 respondents with normal BMI and anemia. Body Mass Index (BMI) is a simple measuring tool for monitoring nutritional status (11). According to Thompson, nutritional status has a positive correlation with hemoglobin concentration, meaning that the worse the nutritional status of a

Table 6. Relationship between BMI and Anemia

BMI	The occurrence of anemia						P value	OR (95% CI)
	Anemia		No anemia		Total			
	n	%	n	%	N	%		
Abnormal	34	11.1	104	34.0	138	45.1	0.009	0.518 (0.315-0851)
Normal	65	21.2	103	113.6	168	54.9		
Total	99	32.4	207	67.6	306	100		

Table 7. Relationship between TDD Consumption and Anemia Incidence

Take Blood Adding Tablets	The occurrence of anemia						P value	OR (95% CI)
	Anemia		No anemia		Total			
	n	%	n	%	N	%		
Irregular	79	25.8	159	52.0	238	77.8	P = 0.557	1,192 (0.663-2,145)
Regular	20	6.5	48	15.7	68	22.2		
Total	99	32.4	207	67.6	306	100		

person, the lower the person's hemoglobin level. this can be related to the food intake consumed by the respondents.In addition, young women are often very aware of their body shape, so that many limit their food consumption.

The results of this study are in line with research conducted by Verma et al (2004) regarding actor-factors affecting anemia among school-dwelling school girls (6-18 years) from residential cities of Ahmedabad that there is a significant relationship between BMI and the incidence of anemia in adolescents (26).

e. Relationship between TDD consumption and anemia

Based on the results of statistical tests in Table 7, it was obtained that the value of p = 0.557 <α 0.05, it can be concluded that there was no significant relationship between the consumption of blood-added tablets and the incidence of anemia among respondents in SMP Negeri, Puskesmas Kota Selatan, Gorontalo City. Judging from the OR value, it shows that respondents who did not consume blood-added tablets had a 1.1 times greater chance of experiencing anemia than respondents who took blood-added tablets.

This research is not in line with the research conducted by Permatasari, T et al (2018) that the consumption of tablets with blood can increase hemoglobin levels in adolescents. Iron nutrition anemia in adolescent girls often occurs due to insufficient intake of iron in their diet. One of the efforts to meet the need for iron due to a lack of effective intake of iron from food is by consuming iron and folate tablets (6).

The results of this study were 20 respondents who consumed TDD regularly and experienced anemia, this could be caused by the food intake factor which contained substances that could inhibit the absorption of iron in the body. While the habit of drinking tea is not related because there may be a gap between the times of drinking tea about 1 hour before or after consuming vegetables or meat that are high in iron content. This step allows iron to be first absorbed by the small intestine and there is no tug of war between iron and tannins which will inhibit iron absorption.

The program of giving blood supplemented tablets for adolescents is again being encouraged with the target of giving it nationally. Young women get a blood supplement tablet with a preventive dose, namely once a week and once a day during menstruation. However, the fact in the field of blood booster tablets only focuses on pregnant women, while for young women it has not been done optimally. This is what causes the high incidence of anemia among adolescent girls (27).

From the results of this study it was found that the respondents who consumed tea, coffee and soy milk, tuh and coffee has substances that bind to iron, so the body cannot absorb iron High doses of calcium in the form of supplements inhibit iron absorption, but the mechanism is not certain.

f. Menstruation Relationship with Anemia

Based on the results of the statistical test in Table 8, it was obtained that the value of p = 0.003 <α 0.05, it can be concluded that there is a very significant relationship between menstruation and the incidence of anemia in respondents in SMP Negeri the work area of Puskesmas Kota Selatan, Gorontalo City. Judging from the OR value shows that respondents who have menstruation are 0.4 times more likely to experience anemia than students who do not have menstruation.

The results of this study were 65 respondents who did not menstruate and experienced anemia. This is because Respondents who have low hemoglobin levels or anemic category can be caused because respondents do not consume foods that contain iron.

According to the assumptions of researchers hal this is due to the factor of ignorance of the importance of consuming foods that contain lots of protein or that contain lots of iron, vegetables and foods that contain lots of B12 to prevent anemia.

When menstruation occurs, blood is released from the body. This causes iron contained in hemoglobin, a component of red blood cells, also wasted. The longer the menstruation lasts, the more expenditure from the body. This results in increased iron expenditure and disturbed iron balance in the body. Menstruation causes women to lose up to twice the amount of iron loss in men. If enough blood comes out during menstruation, it means that the amount of iron lost from the body is also quite large. Everyone experiences blood loss in different amounts. This is influenced by many factors such as heredity, state of birth, and body size (15).

g. Multivariate Analysis (Most dominant factor analysis)

Based on the multivariate results, it was found that 5 factors influence the incidence of anemia in adolescent girls in State Junior High Schools in the working area of Puskesmas Kota Selatan, Gorontalo City. Knowledge variable is a factor that can predict the incidence of anemia with an OR value of 2.6 (1,643-4,770), which means that respondents who have good knowledge have a 2.6 times greater chance of preventing the incidence of anemia which is controlled by variables of menstrual patterns, age of menstruation and mother's education.

The results of the analysis in the table 9. above show that the variable that has a dominant influence on the incidence of anemia is knowledge with a value of p = 0.001 and an OR value of 2.650 (95% CI = 1.643-4.770), which means that young girls who have good knowledge are twice as likely to avoid the incidence of anemia was controlled by variables of menstrual patterns, menstruation and maternal education.

Table 8. Relationship between Menstruation and the Incidence of Anemia

Menstrual History	The occurrence of anemia						P value	OR (95% CI)
	Anemia		No anemia		Total			
	n	%	n	%	N	%		
There is	34	11.1	109	35.6	143	46.7	P = 0.003	0.470
There is no	65	21.2	98	32.0	163	53.3		0.286-0.773
Total	99	32.4	207	67.6	306	100		

Table 9. Multivariate Analysis (Most dominant factor analysis)

Variable	B	SE	Wald	df	Sig.	Exp (B)	95% CI for EXP (B)	
							Lower	Upper
Knowledge	.975	.295	10,929	1	.001	2,650	1,643	4,770
Mother's education	-1,077	.278	15,003	1	.000	.341	0.217	0.604
Menstrual pattern	.840	.279	9,065	1	.003	2,316	1,699	4,602
Menstrual Age	-.583	.277	4,441	1	.035	.558	1,381	3,675
Constant	.066	.839	.006	1	.937	1,068		

This research is supported by research conducted by Hatta et al (2017) concerning factors related to the incidence of anemia in adolescent girls in Sman 2 dead end, Malangka, Mamasa district in 2017 which states that knowledge is a guideline in shaping one's actions (over behavior). Most of the knowledge is obtained through the eyes and ears. General knowledge about nutrition includes food functions, food combinations that can avoid waste, how to manage and choose and how to assess health related to nutritional factors A person's knowledge can affect the occurrence of anemia because knowledge can influence behavior including lifestyle and eating habits (28). Efforts that can be made to increase knowledge are by increasing information about adolescent anemia by involving the role of the media. Mass media and the internet are very important in an effort to increase adolescent knowledge. The current media activism greatly supports the increase in adolescent knowledge.

Menstrual pattern is a series of menstrual processes consisting of the menstrual cycle, menstrual bleeding duration and dysmenorrhoea. The menstrual cycle is the time from the first day of menstruation until the arrival of the next menstrual period. While the normal menstrual cycle in women ranges from 21-35 days and only 10-15% have a 28-day menstrual cycle with a menstrual length of 3-5 days, some are 7-8 days. Every day change pads 2-5 times. The length of the menstrual cycle is influenced by age, body weight, physical activity, stress levels, genetics and nutrition (12). Menstruation is the collapse of endometrial cell tissue due to the influence of cyclic changes in the hormonal balance of female reproduction (12). A series of menstrual events experienced by women each month will form a menstrual pattern which includes the length, number and cycle. Based on the results of the research and the theory above, it can be concluded that it is very important to have an anemia prevention program in adolescent girls by giving 1x 60 mg of Fe tablets per day during menstruation and also paying attention to the intake of nutrients that contain lots of iron.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the research and discussion described in the previous chapter, the following conclusions can be made: Research that has been conducted on young women in the working area of Puskesmas Kota Selatan 32% of young women suffer from anemia. The description of the factors associated with the incidence of anemia in adolescent girls shows that anemia is more prevalent with abnormal menarche age, knowledge of anemia, anemia education, menstrual patterns, BMI. The most dominant factor in the incidence of anemia in female adolescents is knowledge of anemia and controlled by mother's education, menstrual patterns, and menstrual age. Implementation of health promotion using various media such as print media, electronic media, Implementation of nutrition promotion for young women to improve healthy life behavior, especially preventing anemia by producing attractive leaflets / posters on balanced nutrition, Increase the consumption

of iron by serving more animal protein such as meat, liver, fish and other animal foods and by increasing the consumption of foods rich in vitamin C such as vegetables and fruits, It is expected that young women who are menstruating to consume blood booster tablets, It is hoped that there will be programmed intervention from related offices / health offices by providing blood-supplemented tablets to adolescent girls who suffer from anemia.

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