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The Relationship Between the Level of Knowledge of Young Women About Anemia and the Incidence of Anemia in Sigarang-Garang Village, Naman Teran District, Karo Regency in 2023

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Abstract. This study aimed to assess the relationship between the knowledge of adolescent girls about anemia and its occurrence in Sigarang-Garang Village, Naman Teran Subdistrict, Karo District, in 2019. The pre-experimental research used a sample of 30 adolescent girls, revealing that a significant 70% had limited knowledge about anemia. Statistical analysis found a significant correlation between knowledge about anemia and its occurrence. The data further suggested that improving knowledge could potentially reduce the incidence of anemia. The study underscores the importance of educational interventions and outreach by healthcare professionals to bridge the knowledge gap and enhance the overall health of adolescent girls in the region.

1. INTRODUCTION

Adolescence is a period of individual life where psychological exploration occurs to find self-identity. In the transition from childhood to adolescence, individuals begin to develop abstract traits and self-concepts become more distinct. Adolescents begin to view themselves with personal judgments and standards, but lack in the interpretation of social comparisons (Kusmiran, 2016).

Anemia is one of the health problems throughout the world, especially developing countries where an estimated 30% of the world's population suffers from anemia. Anemia occurs in many communities, especially in adolescent girls. Anemia is prone to occur in adolescent girls due to the increased need for iron during the growth period. The body needs a large amount of nutrients, including iron, which is mainly used by the blood to transport oxygen. Insufficient iron will trigger anemia. Plus, blood loss during menstruation also increases the risk of anemia. According to WHO, the incidence of anemia in adolescent girls in developing countries is around 53.7% of all adolescent girls, anemia often attacks adolescent girls caused by stressful conditions, menstruation, or late eating (Laksmita, dkk, 2018). Anemia is a condition where hemoglobin levels are less than expected according to age and sex, where hemoglobin levels at birth are high (20 grams / dl), but decrease in the first three months of life to the lowest number (10 grams / dl) before increasing back to normal adult values (>12 grams / dl in women and > 13 grams / dl in men). Low hemoglobin levels are mostly experienced by adolescent girls who are a population group prone to iron deficiency. The total amount of iron in the body averages 4-5 grams, and 65% of the total amount of iron in the body is found in the form of hemoglobin (Aulia, et al, 2017).

The prevalence of anemia globally is about 51%. The prevalence for toddlers is around 43%, school-age children 37%, adult men only 18%, and non-pregnant women 35% (Arisman, 2009). In the World Health Organization (WHO), the global prevalence of anemia is estimated at 30.2% in women who are not pregnant, increasing by 47.4% during pregnancy. Anemia is more likely to occur in developing countries than in non-developed countries. Thirty-six percent (or approximately 1400 million people) of the estimated population of 3800 million people in developing countries suffer from anemia, while in developed countries only about 8% (or approximately 100 million people) of the estimated population of 1200 million. In Indonesia, nutritional anemia is still one of the main nutritional problems in Indonesia, in addition to three other nutritional problems, namely lack of protein calories, vitamin A deficiency, and endemic goiter (Husna, dkk, 2015).

The prevalence of anemia in Indonesia is included in the moderate category, but in some regional countries (provinces, districts / cities) there is still a number of prevalence included in the weight category. In 2000, of the total population in the world, there were about 1.2 billion (1/5 of the population) of adolescents aged 10-19 years. while in Indonesia from the total population in 2005, as

many as 218. Million, the proportion of adolescents aged 10-19 years is 41 million, and 20.5 million of them are women (Briawan, 2016). Based on an initial survey conducted by the author on June 20, 2019, out of 11 young women in Sada Perarih Village, Merdeka District, Regency, only 4 people knew about Anemia, while 7 other people did not know about Anemia.

2. METHOD

The research type employed was a pre-experimental design using "The One Shot Case Study" approach to gather information about the knowledge of anemia among adolescent girls in Sigarang-Garang Village, Naman Teran Subdistrict, Karo District in 2019.This research was conducted to examine the relationship between the knowledge level of adolescent girls and the occurrence of anemia in Sigarang-Garang Village, Naman Teran Subdistrict, Karo District in 2019. The decision to select this location was based on an initial survey which found a sufficient population of adolescent girls in the area. Furthermore, no previous research had been conducted specifically examining the connection between adolescent girls' knowledge of anemia and its incidence in this specific location. The population size was deemed adequate for the study.

The research population and sample consist of 30 adolescent girls from Sigarang-garang Village, Naman Teran Subdistrict, Karo District in 2019. Primary data was obtained by distributing questionnaires to adolescent girls aged 11-19 in Sigarang-garang Village, Naman Teran Subdistrict, Karo District in 2019. Secondary data was sourced directly from the village head of the same location in the same year. This instrument can be in the form of questionnaires, *checklist* sheets or lists of questions, observation forms, forms related to data recording and so on

Table 1. questionnaire or list of questions

No.	The Curse of the Enemy	Nomor	Information
1	Definition of Anemia	1	1
2	hemoglobin level	3	1
3	Causes of Anemia	4, 9, 10	3
4	Impact of Anemia	10, 18,	2
5	Symptoms of anemia	2	1
6	Management	19	1
7	Complications	20	1
8	Prevention in Anemia	5,6,7,12,13,16,11,17	7
9	Anemia Management	8, 14, 15,	3
	Total		**20**

Univariate Analysis Explains or describes the distribution of repondents and describes independent variables and dependent variables so that variations of each variable are known. Bivariate analysis looks at the relationship between two independent variables with dependent variables. Data testing is carried out using the Chi-square statistical test (α=0.05) if the value of x2 is calculated > x2 this shows that the alternative hypothesis (Ha) is accepted meaning that there is a significant relationship. Meanwhile, if x2 count < x2 tabe. This shows that the null hypothesis (H0) is accepted meaning no.

3. RESULTS AND DISCUSSION

After conducting a study on 30 adolescent girls in Sigarang-garang Village, Naman Teran District, Karo Regency in 2019 "The Relationship Between the Level of Adolescent Women's Anemia on Anemia and the Incidence of Anemia in Sigarang-Garang Village, Naman Teran District, Karo Regency in 2019", the following results were obtained:

Analyzes Data *Univariate*

Univariate analysis was used to see the frequency and percentage distribution of the research variable "The relationship between the level of knowledge of adolescent girls about anemia and the

incidence of anemia in Sigarang-garang Village, Naman Teran District, Karo Regency in 2019", namely:

Distribution of respondents by characteristics

After conducting research on 30 respondents in Sigarang-garang Village, Naman Teran District, Karo Regency in 2019, the author obtained results describing the characteristics of respondents, namely age, education, occupation, number of children, and sources of information.

Table 2. Distribution of Young Women's Characteristics in Sigarang-Garang Village, Naman Teran District, Karo Regency in 2019

Characteristics	Category	Total (person)	Percentage (%)
Age	18-19 years	18	60
	20-21 years	12	40
Total			**100**
Education	Basis (SD, SMP)	2	6,6
	Senior High School	23	76,6
	Higher Education	5	16,6
Total		**30**	**100%**
Parents' Work	Work	29	96,7%
	Does not work	1	0,3%
Total		**30**	**100%**
Number of children	Scundigravida	9	30
	Multigrande	16	53,3
	Grandegravida	5	16,7
Total		**30**	**100**
Resources	Family	6	20%
	Mass Media	11	36,6
	Health workers	13	43,3
Total		**30**	**100%**

From table 2 above, the characteristics of the majority of respondents are at the age of 18-19 years as many respondents (60%), secondary education (73.3%), the number of multigravida siblings (53.3%), parental work (96.7%), sources of information obtained from health workers (43%), and mass media (36.6%).

Distribution of Respondents Based on Knowledge

The knowledge of adolescent girls about anemia in Sigarang-Garang Village, Naman Teran District, Karo Regency in 2019, can be seen in the table as follows:

Table 3. Frequency distribution of respondents based on adolescent girls' knowledge about anemia in Sigarang-garang Village, Naman Teran District, Karo Regency in 2019

Knowledge	Number (persons)	Percentage (%)
Good	2 persons	6,6%
Enough	7 persons	23,3%
Less	21 persons	70%
Total	**30**	**100%**

Based on Table 3, it can be seen that of the 30 respondents, the majority had less knowledge as many as 21 respondents (70%) about anemia in Sigarang-garang Village, Naman Teran District, Karo Regency in 2019.

Distribution of Respondents Based on Anemia

Anemia in adolescent girls in Sigara-Garang Village, Naman Teran District, Karo Regency in 2019, can be seen from the table as follows:

Table 4. Distribution of anemia incidence in adolescent girls in Sigarang-garang Village, Naman Teran District, Karo Regency in 2019

HB Level	Information	Total	%
< 11 gr/dl	Anemia	22	73,3
> 12 gr/dl	No anemia	8	26,7
Total		**30**	**100%**

Based on table 4, it can be seen that of the 30 respondents, the majority of anemia was 23 respondents (76.7%) in Sigarang-garang Village, Naman Teran District, Karo Regency in 2019.

Bivariate *Data Analysis*

Bivariate *data analysis* was used to see the meaning of the relationship between *independent* and *dependent* variables performed with the *Chi-square statistical test* (*x2*). From the research conducted, data can be obtained on the relationship between the level of knowledge of adolescent girls about anemia and the incidence of anemia in Sigarang-Garang Village, Naman Teran District, Karo Regency in 2019 as follows:

Table 5. Cross-tabulation of the relationship between the level of knowledge of adolescent girls about anemia and the incidence of anemia in Sigarang-garang Village, Naman Teran District, Karo Regency in 2019

Knowledge	Incidence of anemia				Total		*Chi-square Test*
	Anemia		No anemia				
	F	%	F	%	F	%	
Good	-	-	2	6,6	2	6,6%	
Enaough	-	-	7	23,3%	7	23,3%	*P=0,00*
Less	21	70%	-	-	21	70%	
Total	**21**	**70%**	**7**	**23,3%**	**30**	**100**	

From table 5, the majority of respondents had less knowledge as many as 21 respondents (70%), and as many as 21 respondents had anemia (70%). Not anemic as many as 7 respondents (23.3%) and well knowledgeable as many as 2 respondents (6.6%).

Discussion

Characteristics of young women

The results of the analysis showed that of the 30 respondents, the majority were in their early teens, namely 18-19 years with a total of 18 respondents (60%) and basic education (SMA). The number of multigravida siblings is (53.3%), parental work is (96.7%). Sources of information obtained from health workers (43%), and mass media (36.6). According to the author's assumption, age is related to knowledge where the more education a person has, the higher the knowledge. The source of information has a huge influence on the source of knowledge. Information sources provide everything useful as a means to learn everything that might make something new Adolescent girls have a high risk of anemia, this greatly affects low education levels, low socioeconomic status, and poor lifestyles (Kusumawati, et al, 2017).

Respondents' knowledge of anemia in adolescent girls

The results of the analysis showed that of the 30 adolescent girls, the majority were in their early teens (18-19 years) with less knowledge than 21 people (70%). Good knowledge as many as 7 people (23.3%). Knowledge is the result of "knowing" and this happens after people have sensed a particular object. Sensing objects occurs through the five human senses, namely sight, hearing, smell, taste and touch by themselves. (Wawan, 2018). According to the author's assumption that the lack of knowledge of adolescent girls about anemia with the incidence of anemia is due to lack of information about anemia. For this reason, it is expected that young women will increase their knowledge about anemia in adolescent girls from various information media both from family, friends, mass media, especially health workers.

The results of the study are not in line with the theory of Notoatmodjo (2016), based on the results of the study above that the knowledge of adolescent girls about anemia in Sigarang-garang

Village, Naman Teran District, Karo Regency in 2019 is more knowledge, the majority of which is less than 21 people (70%), this is due to the lack of information obtained about anemia in adolescent girls. This is in line with the research of Laksmita, et al, (2018) entitled "The relationship between adolescent girls' knowledge about anemia and the incidence in Tanggamus Regency class XI at SMA Negeri 1 Talang Padang", the results of the study obtained 53.1% of adolescent girls have less knowledge and 46.9% have enough knowledge. Thus, it can be concluded in this study that adolescent girls need to know about anemia and maintain increased needs and nutritional intake in adolescent girls. Therefore, from the results of this study, no gap was found between the results of the study and the theory that has been stated above.

Incidence of Anemia

Based on the results of the study, from 30 respondents, 70% of adolescent girls have anemia, and 23.3% of adolescent girls are not anemic. These results show that most adolescent girls have anemia. Anemia is a condition in which hemoglobin concentrations are less than normal; anemia reflects a less than normal erythrocyte count in circulation. As a result, the amount of oxygen delivered to body tissues is also reduced (Brunner, et al, 2016).

This is in accordance with the theory of Aulia, et al (2017), anemia is a condition where hemoglobin levels are less than expected according to age and sex, where hemoglobin levels at birth are high (20 grams / dl), but decrease in the first three months of life to the lowest number (10 grams / dl) before increasing back to normal adult values (>12 grams / dl in women and >13 grams / dl in men). Low hemoglobin levels are mostly experienced by adolescent girls who are a population group prone to iron deficiency. The total amount of iron in the body averages 4-5 grams, and 65% of the total amount of iron in the body is found in the form of hemoglobin. Likewise, cooperation from adolescent girls is needed to maintain nutritional intake and increase their needs, where adolescents who experience anemia can immediately check their health to the nearest health worker so that treatment or counseling can be immediately carried out for the young woman.

The high incidence of anemia in adolescent girls is due to lack of knowledge about anemia. The lack of knowledge of adolescent girls about anemia is caused by the lack of sources of information obtained from various sources of information such as family, mass media, and health workers. Knowledge is often gained from oneself as well as experience gained by others. Symptoms of anemia that are often experienced are dizziness, especially when standing, pale skin, indeterminate menstrual silus and headaches (Yuni, 2018). According to the author's assumption from the results of research that has been conducted, there are still many adolescent girls who experience anemia, which is 73.3% due to the majority of adolescent girls with secondary education (SMA) 76.6%, where the level of education greatly affects the level of knowledge, and adolescent girls are the majority aged 18-19 years (60%), where age affects the level of knowledge of adolescent girls about anemia.

Analysis of the Relationship of Knowledge and Behavior About Anemia to the Incidence of Anemia

Judging from the results of a study conducted on 30 respondents, the majority of adolescent girls in Sigarang-garang Village, Naman Teran District, out of 30 adolescent girls who had a majority of less, namely as many as 21 respondents who had anemia 21 (70%) and those who were not anemic as many as 7 respondents (23%). According to the author's assumption, age is related to the knowledge of adolescent girls, where the older a person is, the higher the level of knowledge about anemia, the lower the incidence of anemia.

Knowledge and behavior about anemia are very influential on anemia. Where less knowledge can possibly occur anemia. The results of the *Chi-square* knowledge statistical test obtained p value = 0.001. This means that the p value is smaller than x2 (0.05) and thus Ho is rejected and Ha is accepted. The results of this study are not in line with the research of Laksmita, et al, (2018), that it can be concluded that there is a relationship between adolescent girls' knowledge about anemia and the incidence of anemia (*p = value 0.034*, OR 2.22). Suggestions for research sites are expected to be efforts to reduce the incidence of anemia by providing counseling and Hb examination for adolescent

girls by Puskesmas officers. Thus, it can be concluded in this study that there is a relationship between the level of knowledge of adolescent girls about anemia and the incidence of anemia in Sigarang-Garang Village, Naman Teran District, Karo Regency in 2019.

4. CONCLUSION

In a 2019 study on the relationship between the knowledge of adolescent girls about anemia in Sigarang-Garang Village, Naman Teran Subdistrict, Karo District, it was concluded that a majority of the respondents, 21 or 70%, had limited knowledge about anemia. A significant correlation was found between the girls' knowledge about anemia and its occurrence, where adequate knowledge could reduce the incidence of anemia (with a p-value of 0.000). Additionally, there was a notable connection between the girls' behavior concerning anemia and its incidence in the same area. In this study, several recommendations are put forward: Adolescent girls in Sigarang-garang Village should enhance their knowledge about anemia, possibly preventing its onset by consuming iron supplements or nutritious food before menstruation. The village head and healthcare professionals in the same area are urged to conduct educational outreach on anemia. Educational institutions are advised to use this research as a reference in the D-III Midwifery Library of ARTA Kabanjahe. Future researchers are encouraged to investigate factors influencing anemia in adolescent girls, including knowledge and incidence of the condition.

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