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Correlation of Anemia Knowledge and Teacher Support with Iron Supplementation Adherence among Adolescent Girls at SMPN 1 Kanor Bojonegoro Regency

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ABSTRACT

Prevalence of anemia in Indonesia has reached 32%, the government's efforts to reduce the prevalence of anemia through a program providing Fe tablets for young women. The purpose of the research is to know the correlation of anemia knowledge and teacher support with adherence with Fe tablet consumption in adolesecent girls at SMPN 1 Kanor, Bojonegoro Regency. This research used analytical with a cross sectional design. The sample as 56 adolescents girls were selected using simple random sampling. Data were collected using questionnaire. Data analysis used the Spearman Rank correlation test. This research showed that a correlation between anemia knowledge with iron supplementation adherence with a p-value of 0.002. There is a correlation between teacher support with iron supplementation adherence with a p-value of 0.001. Can be concluded a significant correlation between knowledge of anemia with the iron supplementation adherence, also a significant correlation between teacher support with iron supplementation adherence in adolescent girls at SMPN 1 Kanor, Bojonegoro Regency. Hopefully there needs to be education regarding anemia knowledge and the importance of consuming Fe tablets as well as monitoring regarding the consumption of Fe tablets in young women.

Keywords: Knowledge, Anemia, Teacher Support, Adherence, Iron Supplementation

INTRODUCTION

Anemia is a global micronutrient issue that requires collective attention. Anemia is a condition characterized by a reduced quantity of red blood cells lower than the reference value, resulting in the body's physiological needs not being met (1-4). A female adolescent is considered to have anemia if her blood hemoglobin level is below 12 g/dl (5). If a woman suffers from anemia during adolescence and continues to be anemic during pregnancy, her condition may worsen due to the increased nutritional needs during pregnancy. If this situation is not properly addressed, it can pose risks to both the mother and the baby(6,7).

The rate of anemia among women aged 15 to 49, according to WHO data from 2021, is 29.9% (8). The incidence of anemia among women of childbearing age in Southeast Asia is 47% (9). According to the 2018 Basic Health Research Report, the rate of anemia in Indonesia is 23.7%, with anemia among adolescents aged 15-24 years at 32%. The percentage of anemic adolescent girls is 27.2%, and 20.3% among boys, with a distribution of 22.7% in urban areas and 25% in rural areas (10). In East Java, the percentage of anemic adolescent girls is 42% (11).

The government has made efforts to reduce the prevalence of anemia by addressing iron intake through the strategy of providing Fe tablets to adolescent girls who will become mothers in the future. However, according to the 2018 Basic Health Research Report, the achievement of Fe tablet distribution among adolescent girls was 76.2%, with 80.9% of these girls receiving Fe tablets from schools. Among the mentioned percentage of the program, only 1.4% of adolescent girls consumed more than 52 tablets in a year, while 98.6% consumed fewer than 52 tablets in a year. The achieved percentage is still far from the government's target of 58% Fe tablet consumption among adolescent girls by 2024. The program's failure to meet the target may be a contributing factor to the increasing incidence of anemia among adolescent girls (12).

An increase in an individual's knowledge leads to greater awareness and positive attitudes towards anemia, including in the practice of consuming Fe tablets (13,14). A study by Anisa et al. (2022) found a correlation between knowledge and the routine activity of taking Fe tablets. A lack of knowledge about anemia among adolescent girls can lead to neglectful behavior regarding Fe tablet consumption, compared to adolescent girls who have a good understanding of anemia (15). Teacher support is also an important factor in increasing adolescent girls' compliance with taking iron tablets, as teachers are able to provide motivation and encourage compliance in taking Fe tablets (15,16).

The results of a preliminary study conducted with 10 female students at SMP Negeri 1 Kanor using a questionnaire revealed that there is low compliance to iron supplementation among the students. Specifically, 70% of the students did not compliance to taking Fe tablets, while 30% did. Of the students, 60% had good knowledge about anemia, and 40% had adequate knowledge. Additionally, 80% of the students received good support from teachers, whereas 20% received less adequate support in consuming Fe tablets. Based on these preliminary findings, the author is motivated to conduct further research on the correlation between anemia knowledge, teacher support, and adherence to Fe tablet consumption at SMP Negeri 1 Kanor, Bojonegoro Regency.

RESEARCH METHOD

This study is an analytical research using a cross-sectional approach. It was conducted from October 2023 to May 2024 at SMPN 1 Kanor, Bojonegoro Regency. The population in this research 123 eightgrade female students at SMPN 1 Kanor. The sample was selected using simple random sampling, amounting to 56 students. Data collection was performed through interviews using a questionnaire. Data analysis in this study includes univariate analysis presented with frequency distribution tables and bivariate analysis using the Spearman Rank correlation test.

RESULT AND DISCUSSION

Caracteristics	n	Percentage (%)
Age (years)		
12	3	5.3
13	28	50
14	24	42.9
15	1	1.8
Father's Education Background		
Not Completed Elementary School	3	5,3
Completed Elementary School	14	25
Completed Junior High School	23	41,1
Completed Senior High School	13	23,2
University	3	5,4
Mother's Education Background		
Not Completed Elementary School	1	1,8

 Table 1. Frequency Distribution of Respondent Characteristics at SMPN 1 Kanor, Bojonegoro

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Completed Elementary School	14	25	
Completed Junior High School	31	55,4	
Completed Senior High School	9	16	
University	1	1,8	
Total	56	100	

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According to Table 1, it is apparent that, among the 56 female student respondents, the majority are 13 years old, amounting to 28 individuals (50%). Most of the respondents' fathers have completed junior high school as their highest level of education, totaling 23 individuals (41.1%). Then, 23 mother of the respondents have their highest level of education as junior high school.

Table	2.	Frequency	Dis	strił	oution	of
Respon	dent	Characterist	ics	at	SMPN	1
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Knowledge	Frequency	Percentage%
Level		
Good	4	7.1
Enough	35	62.5
Less	17	30.4
Total	56	100

According to Table 2, it is known that out of a total of 56 respondents, the majority had enough knowledge about anemia, with 35 individuals (62.5%).

Table 3. Frequency Distribution of TeacherSupport Among Respondents at SMPN 1Kanor, Bojonegoro Regency

Teacher Support	Frequency	Percentage%
Good	6	10.7
Enough	23	41.1
Less	27	48.2
Total	56	100

According to Table 3 above, it is evident that most of the 56 respondents feel they receive less support from teachers regarding iron tablet consumption, amounting to 27 individuals (48.2%).

Table 4. Frequency Distribution of IronSupplementationAdherenceRespondentsatSMPN1Kanor,Bojonegoro Regency

Iron Supplementation Adherence	Frekuensi	Persentase (%)
Adhered	9	16.1
Did Not Adhered	47	83.9
Total	56	100

According to Table 4, it is observed that most of the 56 respondents are did not adhered with iron supplementation, totaling 47 individuals (83.9%).

Table 5. Cross-tabulation of Anemia Knowledge and Iron Supplementation Adherence among

 Respondents at SMPN 1 Kanor, Bojonegoro Regency

Iron Supplementation Adherence								
Anemia	Ad	hered	Did Not		Total		r	p-value
Knowledge			Ad	Adhered				
	n	%	n	%	n	%		
Good	3	75	1	25	4	100	-	
Enough	6	17,1	29	82,9	35	100	0,413	0,002
Less	0	0,0	17	100	17	100	-	
Total	9	16,1	47	83,9	56	100	-	

The cross-tabulation in Table 5 above shows that out of a total of 4 respondents with good knowledge, 3 (75%) adhered to taking Fe tablets, while 1 (25%) did not adhere. Meanwhile, out of a total of 35 respondents with enough knowledge, the majority, 29 (82.9%), did not adhere to taking Fe tablets, while the remaining 6 (17.1%) did adhere. Furthermore, out of a total of 17 respondents with less knowledge, none adhered to consuming Fe tablets.

From the analysis of the Spearman rank correlation test between knowledge of anemia and adherence to iron supplementation, a p-value of 0.002 was obtained, which means p-value < 0.05. This indicates that there is a correlation between knowledge of anemia and adherence to iron supplementation among adolescent girls. The correlation coefficient is 0.413, which suggests a moderate relationship between knowledge of anemia and adherence to iron tablet consumption.

Table 6. Cross-tabulation of Teacher Support and Iron Supplementation Adherence among

 Respondents at SMPN 1 Kanor, Bojonegoro Regency

Iron Supplementation Adherence								
Teacher Support	Ad	hered	Did N	Did Not Adhered		Total		p-value
	n	%	n	%				
Good	4	66,7	2	33,3	6	100	-	
Enough	4	17,4	19	82,6	23	100	0,424	0,001
Less	1	3,7	26	96,3	27	100	-	
Total	9	16,1	47	83,9	56	100	-	

According to the cross-tabulation presented in Table 6 above, it is shown that out of a total of 6 respondents who felt they received good support from teachers for consuming iron tablets, 4 (66.7%) adhered to the consumption, while 2(33.3%) did not adhere. Furthermore, among the 23 respondents who received enough support, 4 (17.4%) adhered iron tablet to consumption, and 19 (82.6%) did not adhere. Meanwhile, out of the 27 respondents who felt they received less support from teachers, 1(3.7%) adhered to iron tablet consumption, and 26 (96.3%) did not adhere.

From the analysis of the spearman rank correlation test between teacher support and adherence to iron tablet consumption, a p-value of 0.001 was obtained, which means p-value < 0.05. This indicates that there is a correlation between teacher support and adherence to iron supplementation among adolescent girls. The correlation coefficient is 0.424, suggesting a moderate relationship between teacher support and adherence to iron tablet consumption.

Correlation Between Knowledge of Anemia with Iron Supplementation Adherence among Adolescent Girls at

SMPN 1 Kanor Bojonegoro Regency

The results of the Spearman rank correlation test between knowledge of anemia and adherence to iron tablet consumption showed a p-value of 0.002, which is less than 0.05. This indicates that there is a significant correlation between knowledge of anemia iron supplementation adherence among adolescent girls at SMPN Kanor, Bojonegoro Regency. The 1 correlation coefficient of 0.413 suggests a moderate correlation between knowledge of anemia iron supplementation. This positive correlation implies that the correlation between knowledge of anemia with iron supplementation is direct. As the level of knowledge among respondents improves, their adherence to iron tablet consumption also improves. It can be said that an individual's behavior in consuming iron tablets is closely related to their knowledge of anemia and information regarding the benefits of iron tablet consumption among adolescent girls.

Most respondents have enough knowledge about anemia-related issues, but many are unaware of the definition of anemia, its signs and symptoms, its impacts, contributing factors, normal hemoglobin levels, and the recommended and to-be-avoided foods and drinks to ensure optimal absorption of iron tablets. Enough knowledge about anemia indicates that respondents do not have а comprehensive understanding of anemia, which may affect their perception of the seriousness and vulnerability to anemia, leading them to neglect the importance of consuming iron tablets among adolescent girls. However, having good knowledge of anemia does not guarantee adherence to taking iron tablets. This can occur due to various factors influencing adherence to iron tablet consumption, whether from the individual themselves or other factors.

The prevention of anemia through the consumption of iron tablets is deemed ineffective due to the low adherence to taking these tablets, with one of the causes being the knowledge possessed bv adolescent girls (17). A good level of knowledge about anemia leads to better understanding, and conversely, a lack of knowledge can affect individual behavior. This is because knowledge can change one's perspective and increase awareness about issues, specifically related to anemia and its prevention (18).

According research by B. Haile et al. in Ethiopia, which reported that 47.9% of adolescent girls had poor adherence to taking iron tablets, this non-adherence was attributed to a lack of knowledge (AOR = 1.40; 0.97-2.03). The study concluded that one of the factors influencing adherence to iron tablet consumption among adolescent girls is their level of knowledge. Adolescents who are not well-informed about the importance of consuming iron tablets are less likely to adhere to the regimen (19).

Supported by research S. Dubik et al. in Ghana, which found a significant correlation between knowledge of anemia and adherence to iron tablet consumption among adolescent girls with a p-value of 0.01. According to this study, the low level of knowledge about anemia among adolescents is due to their lack of understanding regarding the meaning, causes, consequences, signs and symptoms, and preventive measures of anemia, leading to insufficient awareness about the importance of taking iron tablet (20).

According to research conducted by Thifal et al. in East Kalimantan, there is a significant relationship between knowledge of anemia and adherence to iron tablet consumption among adolescent girls, with a p-value of 0.01. One of the factors causing non-adherence to iron tablet consumption among adolescent girls is their knowledge about anemia. Adolescent girls with limited anemia knowledge about and the importance of taking iron tablets are 1.560 times more likely to be non-adherent compared to those with good knowledge of anemia. The better the level of knowledge, the more likely it is that adolescent girls will understand anemia and its prevention (21).

Correlation Between Teacher Support with Iron Supplementation Adherence among Adolescent Girls at SMPN 1 Kanor, Bojonegoro Regency

The results of the Spearman rank correlation test between teacher support and adherence to iron tablet consumption revealed a p-value of 0.001, which is less than 0.05. This indicates that there is a significant correlation between teacher support with iron supplementation adherence among adolescent girls at SMPN Kanor, Bojonegoro Regency. The 1 correlation coefficient of 0.424 suggests a moderate correlation between teacher and iron supplementation support adherence. This positive correlation means that the correlation is direct: as teacher support improves, adherence to iron tablet consumption also improves.

Most respondents feel they receive less support from teachers regarding iron tablet consumption. Teacher support is an influential factor in the routine behavior of consuming iron tablets. Providing information, guidance, and motivation from teachers about the benefits of taking iron tablets can potentially encourage adolescents to adhere to the regimen. Support can also include monitoring iron tablet consumption activities, consumption activities that are supervised by the school or teachers tend to be more regular. The role of teachers has a significant impact on students' behavior and positive decisionmaking at school, particularly regarding adherence to iron tablet consumption.

The lack of monitoring and supervision of the iron tablet consumption program at school is a reinforcing factor for adolescent girls' non-adherence to taking iron tablets. Additionally, insufficient communication. information. and education provided by teachers regarding anemia, iron tablets, and the management of side effects experienced during iron tablet consumption can contribute to adolescent girls' non-adherence to the regimen (22,23).

According to a study by Pou, Azhari, and Ramsyifa at SMPN 212 and SMKN 37 in the Pasar Minggu area of South Jakarta, there is a correlation between teacher support and adherence to iron tablet consumption among adolescent girls at school, with a p-value of 0.011. The role of teachers as figures in the school can influence student behavior, specifically in relation to iron tablet consumption among adolescent girls. Given the significant amount of time students spend at school, teachers often become role models. Teachers also serve as sources of information, motivation, and supervision, which helps ensure that adolescent girls adhere to iron tablet consumption at school (24).

According to research by H. Silitonga et al. at three schools in Sidoarjo, there is a notable correlation between the number of information sources and adherence to iron tablet consumption, with a p-value of 0.013. The level of adherence among adolescent girls to iron tablet consumption is positively associated to the number of information sources and the presence of individuals who remind them to adhere to the regimen. Social environment involvement, such as support from teachers, parents, and health workers as sources of information and reminders, can enhance the level of adherence among adolescent girls in consuming iron tablets (25).

The role of schools in establishing a schedule for iron tablet consumption, such as a designated day each week, is an important strategy to address nonadherence among adolescent girls due to forgetfulness. Additionally, the role of teachers in providing information at school is a crucial factor that can enhance adherence to routine iron tablet consumption among adolescent girls. Teachers who provide knowledge about anemia to students can increase their health knowledge, particularly regarding anemia and the importance of taking iron tablets, which can influence students' nutritional behavior. This finding is supported by research conducted by Apriningsih et al. on adolescent girls in SMA Kota Depok, which concluded that there is a significant relationship between the school's provision of an iron tablet consumption schedule and adherence, with a p-value of 0.000, and between the education on anemia and iron tablet consumption provided by teachers and adherence, with a p-value of 0.013(26).

CONCLUSION AND RECOMMENDATION

Iron tablet supplementation is one of the government's efforts to reduce the high prevalence of anemia among adolescent girls in Indonesia. However, the low adherence among adolescent girls to consuming iron tablets, due to factors poses a challenge to this program. This study found that there is a correlation of anemia knowledge and teacher support with iron supplementation among adolescent girls at SMPN 1 Kanor, Bojonegoro Regency. Therefore, it is essential for various parties to be prepared for the implementation of the iron tablet supplementation program. Adolescent girls should have comprehensive knowledge about anemia to make informed nutritional choices. The

involvement of social environments, such as teachers providing information, motivation, and supervision, can improve adherence to iron tablet consumption among adolescent girls at school. It is hoped that there will be educational efforts regarding anemia and the importance of iron tablet consumption, as well as monitoring of iron tablet intake among adolescent girls.

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