

## Analysis of Factors Associated with The Incidence of Anemia in Class X Students of SMA Negeri 6 SIDRAP

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| Article Information                                                                                                                                                                                                                                                                                                  | ABSTRACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| <b>Article History:</b><br><i>Submission:</i> 01 May 2025<br><i>Revision:</i> 23 July 2025<br><i>Reception:</i> 07 August 2025                                                                                                                                                                                       | <b>Introduction:</b> Anemia in adolescents (rematriates) is a common health problem that negatively affects physical development and academic performance. In Indonesia, the prevalence of anemia among adolescent girls reaches 23% of the population. Low adherence to the consumption of blood supplement tablets (TTD) is one of the main causes of the high prevalence of anemia among adolescent girls. To overcome this, the government has launched a program to provide TTD to adolescent girls through the School Health Unit. This study aims to analyze the factors associated with the incidence of anemia in class X students of SMA Negeri 6 SIDRAP students. <b>Method:</b> This study used quantitative method with cross sectional design. The sample consisted of 117 class X students selected through total sampling technique. Data were collected using a questionnaire and examination of hemoglobin (Hb) levels and analyzed using the <i>chi square</i> test. <b>Results:</b> The results of this study showed that there was no significant relationship between the variables of knowledge ( <i>p value</i> = 0.133), health worker support ( <i>p</i> = value 0.320) and school support ( <i>p value</i> = 0.323) with the incidence of anemia. However, there was a significant relationship between family support ( <i>p value</i> = 0.037) and the incidence of anemia. <b>Conclusion:</b> The conclusion of this study shows that family support has an important role in reducing the incidence of anemia in adolescent girls. This finding is expected to be the basis for schools and health workers to strengthen the role of families in the program. |
| <b>Keywords:</b> Anemia, compliance, adolescent girls, iron tablets                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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### INTRODUCTION

Anemia is one of the global health issues, especially in developing countries, with 30% of the population experiencing anemia. The World Health Organization (WHO) notes that globally, the prevalence of anemia among women aged 15 years and over reaches 28%. The Southeast Asia region recorded the highest prevalence, at 42%. In Indonesia, the prevalence of anemia in rematriates reached 23% compared to neighboring countries such

as Malaysia (21%) and Singapore (22%). Nonetheless, this figure is still far above the minimum global anemia prevalence limit set for women aged 15 years and over, which is 12% (Marfiah, 2023). Even in South Sulawesi it ranges from 30-35%. So that this problem becomes one of the priorities in adolescent health programs (Central Agency Statistics, 2023).

According to WHO (2023), anemia is a condition when hemoglobin (Hb), hematocrit (HCT), or red blood cell count levels are below the normal threshold, which causes symptoms such as fatigue, dizziness, pallor, and decreased concentration and productivity. The impact of anemia not only affects girls' academic performance, but also contributes to impaired growth, decreased physical fitness, and potential reproductive health problems in the future. In the long term, anemia in adolescents can hamper economic productivity and increase the risk of complications during pregnancy (Ariani et al., 2023).

To address the problem, the government runs a program to provide TTD to rematriates through the School Health Unit, as stipulated in the Circular Letter of the Director General of Public Health No. HK.03.03/V/0595/2016. This program recommends the consumption of one tablet per week throughout the year to meet iron needs early on and reduce the risk of anemia, bleeding during childbirth, low birth weight babies (LBW), and stunting (Fitria et al., 2021).

However, the implementation of this program still faces serious obstacles in terms of compliance. Based on data from the Indonesian Ministry of Health (2021), only 27.6% of adolescent girls consumed TTD in the past month, and only 1.4% were compliant with the annual recommendation of 52 tablets. This low compliance is due to various factors, such as lack of knowledge, side effects (nausea, dizziness), and lack of support and supervision from the surrounding environment, including schools, families, and health workers (Indonesian Ministry of Health, 2021).

Lawrence Green suggested that health behavior is determined by three factors, namely predisposing factors (such as knowledge), supporting factors (such as the presence of facilities and health workers), and motivating factors (such as family and school support) (Aliyah et al., 2023). These three aspects interact with each other in influencing individual decisions in undergoing healthy behaviors, including compliance in TTD consumption (Aliyah et al., 2023).

The results of anemia screening conducted by the Lawawoi Health Center at SMA Negeri 6 SIDRAP in 2024 showed a high incidence of anemia. In May 2024, out of 98 class X students screened, 55 (65.48%) were anemic. This number increased in October, with 92 out of 102 girls (90.20%) found to be anemic - mostly in the moderate anemia category. This finding confirms the need for further comprehensive interventions (Secondary Data of Lawawoi Health Center, 2024).

A number of studies have shown mixed results regarding the factors that influence the incidence of anemia. Research by Suaib et al (2024) and Prayudhistya et al (2023) found a significant relationship between compliance with TTD consumption and family support with the incidence of anemia. Widya & Kasni (2024) which showed the importance of health worker support, while Lindawati (2023) and Waelan et al (2020) found no significant relationship between knowledge or school support with the incidence of anemia. This difference in results suggests the importance of an in-depth analysis of the various factors that influence adherence and the incidence of anemia.

Low knowledge about anemia and its prevention can lead to poor intake of essential nutrients such as iron, protein, and vitamin C (Yudina & Fayasari, 2020). health workers and schools have an important role in education, providing health media, and monitoring the implementation of the TTD program. On the other hand, family support plays a role as

a reminder of TTD consumption, shaper of nutritious eating habits, and provider of motivation in leading a healthy life. Based on this background, this study aims to analyze the factors associated with the incidence of anemia in class X SMA Negeri 6 SIDRAP students.

## LITERATURE REVIEW

According to the *American Society of Hematology* in Hasibuan (2022), anemia is a condition in which the amount of hemoglobin is below the normal limit, so it is unable to carry out its function as a carrier of oxygen in sufficient quantities into the body's tissues (Hasibuan, 2022). In rematriates, anemia is often caused by menstrual blood loss, poor nutrient intake, and worm infections. Common symptoms that often appear when anemia is dizzy, easily tired, pale skin and decreased concentration of learning (Wandasari, 2022). Adolescence is a critical phase in growth and development, so health problems such as anemia can have a long-term impact on academic achievement and reproductive health. Therefore, anemia can be avoided through the consumption of foods rich in iron, folic acid, vitamin A, vitamin C, vitamin E, and zinc, as well as with the use of TTD (Aliyah et al., 2023).

Compliance comes from the basic word "obey" which means obedient and tends to follow orders (Lestari & Handayani, 2023). According to Albery in Nurjanah and Azinar (2023) compliance is a condition that arises from behavior that reflects values such as obedience, order, and order. The TTD program is one of the government's main interventions in reducing the incidence of anemia in rematriates. However, the level of compliance of female students in consuming TTD is still low due to various obstacles, such as ignorance of its benefits, mild side effects such as nausea and dizziness and lack of supervision from health workers, teachers and families. In addition, compliance is also strongly influenced by the awareness of the individual himself in maintaining his health (Nurjanah & Azinar, 2023).

Adherence in consuming TTD in rematriates is influenced by various factors, both internal and external. These factors include level of knowledge, support from school, family support and involvement of health workers. Previous research shows that low adherence is often caused by a lack of information about the benefits of TTD, minor side effects such as nausea or dizziness, and a lack of supervision or reminders from the surrounding environment (Nurjanah & Azinar, 2023).

Knowledge is the result of the process of understanding that arises after individuals make observations of certain objects. In addition, knowledge also plays a very important role in shaping individual behavior (Mardhatillah et al., 2021). In general, behavior based on knowledge and positive attitudes will last for a long time (Adri et al., 2020). Knowledge plays an important role in encouraging rematriate adherence to taking TTD. With a good understanding of anemia and its impact, adolescents are more aware of the importance of prevention, so they are motivated to maintain nutritional intake and regularly consume TTD. Good knowledge will increase awareness of the importance of preventing anemia and encourage female students to consume TTD regularly. Without sufficient knowledge, rematriates will be at high risk of ignoring the importance of iron supplements in their daily lives (Nadiya et al., 2023). Evaluation of knowledge can be done through the question and answer method or by adding a questionnaire that contains statements related to the topic of knowledge to be known (Mukharomah & Budiono, 2024).

Health workers are program implementers who have an important role in implementing health interventions in schools, such as providing TTD, monitoring TTD consumption, evaluating Hb levels and counseling students. Health counseling includes

more than just the ability to speak in public, but also includes skills to analyze targets, set priorities, choose appropriate methods, carry out targeted education, and evaluate the effectiveness of counseling (Said et al., 2020). The more effective the role of health workers, the more compliant rematriates will be in consuming TTD. This support not only provides technical knowledge, but can also increase girls' confidence and concern for their own health. Even so, the success of this support still depends on the individual's response and awareness in following it up (Lasso, 2023).

The school acts not only as a place to learn, but also as an environment where the values of healthy living can be applied in a sustainable manner (Sulaiman et al., 2024). The school environment is a place where there is direct interaction between students and teachers, as well as education personnel, which aims to support rematriation development and provide an understanding of TTD. Schools have an important role in providing social media that has the potential to promote health and conduct other health interventions, and is more effective in reaching all targets (Febrianti et al., 2023). Although the support from schools is very good, optimal results are difficult to achieve if students do not have awareness and responsibility for their health. Therefore, health education should be integrated continuously in learning activities (Lestari & Handayani, 2023).

Family support is one of the key elements in the successful implementation of TTD. Emotions, advice, information, motivation, and understanding provided by other family members can be considered as a form of such support. This support is very important in efforts to prevent anemia in rematriates and is expected to increase compliance in taking TTD. When families accustom their family members to living a healthy lifestyle, especially in terms of anemia prevention, such as eating nutritious foods, getting enough rest, and immediately checking their health when experiencing complaints, then the teenager tends to follow this positive behavior. Conversely, families who do not pay attention to their family members will be more prone to anemia (Prayudhistya et al., 2023). So with this, an evaluation is needed to measure the effectiveness of the training and its effect on female students (Ramlan et al., 2024).

## METHOD

This study is an observational analytic study that uses a quantitative approach with a *cross-sectional* design, where data collection and measurement of variables are carried out once at the same time. This study was conducted in class X SMA Negeri 6 SIDRAP which is the working area of Lawawoi Health Center, Watang Pulu District, Sidenreng Rappang Regency in December 2024 to April 2025. The population in this study were all class X students at SMA Negeri 6 SIDRAP, totaling 117 students. The sampling technique used the total sampling method, so that the entire population was used as a sample.

The independent variables in this study consisted of schoolgirl knowledge, health worker support, school support, and family support. Meanwhile, the dependent variable was the incidence of anemia. Knowledge was measured through eight closed-ended statements and categorized into "good" if the total score exceeded the average value of all respondents, and "poor" if the score was equal to or below the average. Health worker, school, and family support were each measured using six statements and classified as "supportive" if the total score exceeded the mean, and "unsupportive" if equal to or below the mean. The incidence of anemia was determined based on the results of the hemoglobin (Hb) level examination, with the criteria being anemia if the Hb level was  $\leq 12$  g/dL and not anemia if the Hb level was  $> 12$  g/dL. The examination was carried out by health workers from the Lawawoi Health Center using a digital Hemoglobin Meter.

The main instruments used in this study were a closed questionnaire and an Hb level measuring device. The questionnaire consisted of 26 statements, consisting of 8 statements regarding knowledge and 18 statements regarding support from health workers, schools, and families. The scale used was a Guttman scale that provides yes/no answer options. This instrument has been tested for validity with  $r$  count  $> 0.361$  and reliability with Cronbach's alpha value  $> 0.60$ , which indicates that the instrument is suitable for use. The data sources used in this study consist of primary data and secondary data. Primary data was obtained directly from respondents through filling out questionnaires independently in class and checking Hb levels individually by health workers. Secondary data was obtained from the report anemia screening that had been conducted by the Lawawoi Health Center at SMA Negeri 6 SIDRAP in 2024.

This study has received approval from the Institute for Research Publication and Community Service and approval from SMA Negeri 6 SIDRAP. All participants were given an explanation of the purpose and procedures of the study, and were asked to sign an agreement sheet after understanding the information presented (*informed consent*). Participation was voluntary, and participants had the right to refuse or withdraw without any consequences. To maintain the integrity and ethics of the research, the identity and personal data of the respondents were kept confidential and only used for academic purposes.

The collected data were analyzed statistically. Univariate analysis was used to describe the frequency and percentage of each variable. Furthermore, bivariate analysis was conducted to examine the relationship between the independent variables (knowledge, health worker support, school support, and family support) and the dependent variable (incidence of anemia) using the *chi square* test. If the conditions for using the *chi square* test were not met, the alternative test *Fisher's Exact Test* was used. The significance value was determined based on  $p$  value  $< 0.05$ .

## RESULTS AND DISCUSSION

The results of the study are presented in the form of a frequency distribution table of each variable measured in detail as shown in Table 1. Based on Table 1, it can be seen that the majority of respondents were 15 years old (55.6%) and were in classes X3 and X5 (20.51% each). Most of the students had insufficient knowledge about anemia (69.2%), but most had support from health workers (80.3%), support from school (73.5%), and support from family (67.5%). Nevertheless, almost half of the respondents were anemic, as many as 58 people (49.6%), which indicates that there is still a need for efforts to increase knowledge, health monitoring and evaluation more intensively in rematriates.

Based on Table 2, the results of the *chi square* test show that the variables of knowledge ( $p = 0.133$ ), health worker support ( $p$ -value = 0.320), and school support ( $p$ -value = 0.323) do not have a significant relationship with the incidence of anemia in female students of SMA Negeri 6 Sidrap, because the  $p$  value is 0.05. In contrast, the family support variable has a significant relationship with the incidence of anemia ( $p$ -value = 0.037), which means that family support plays an important role in preventing anemia in female students. Thus, it can be concluded that of the four variables studied, only family support was shown to have a significant influence on the incidence of anemia, so interventions involving families can be an important strategy in reducing the prevalence of anemia in rematriates.

### Relationship between knowledge of students and the incidence of anemia

The results showed that there was no significant relationship between the knowledge of schoolgirls and the incidence of anemia. From the results of the analysis

obtained, 46% of female students who have good knowledge but still experience anemia. This is because good knowledge is not always accompanied by the right behavior. Rematriates who realize the importance of taking TTD but do not do it regularly due to laziness, forgetfulness, or discomfort due to side effects such as nausea, dizziness, black stools, and a bad feeling in the stomach. Where the results of the Chi-square statistical test obtained a p-value= 0.133 (p-value> 0.05).

**Table 1 Characteristics, knowledge of students, health worker support, school support and family support**

| Variable              | Categories     | Frequency | Percentage (%) |
|-----------------------|----------------|-----------|----------------|
| Age (year)            | 15             | 65        | 55.6           |
|                       | 16             | 49        | 41.9           |
|                       | 17             | 3         | 2.6            |
| Class                 | X1             | 22        | 18.8           |
|                       | X2             | 22        | 18.8           |
|                       | X3             | 24        | 20.5           |
|                       | X4             | 25        | 21.3           |
|                       | X5             | 24        | 20.5           |
| Knowledge             | Good           | 81        | 69.2           |
|                       | Less           | 36        | 30.8           |
| Health worker support | Support        | 94        | 80.3           |
|                       | Not Supportive | 23        | 19.7           |
| School Support        | Support        | 86        | 73.5           |
|                       | Not Supportive | 31        | 26.5           |
| Family Support        | Supportive     | 79        | 67.5           |
|                       | Not Supportive | 38        | 32.5           |
| Incidence of Anemia   | Anemia         | 58        | 49.6           |
|                       | Not Anemic     | 59        | 50.4           |

**Table 2 Bivariate Analysis Results**

| Variable                     | Incidence of Anemia |      |        |      | Total |     | <i>P value</i> |
|------------------------------|---------------------|------|--------|------|-------|-----|----------------|
|                              | Not Anemia          |      | Anemia |      | N     | %   |                |
|                              | n                   | %    | n      | %    |       |     |                |
| <b>Knowledge</b>             |                     |      |        |      |       |     |                |
| Good                         | 47                  | 54.0 | 40     | 46.0 | 87    | 100 | 0.133          |
| Less                         | 12                  | 40.0 | 18     | 60.0 | 30    | 100 |                |
| <b>Health worker support</b> |                     |      |        |      |       |     |                |
| Support                      | 44                  | 52.4 | 40     | 47.6 | 84    | 100 | 0.320          |
| Not in favor                 | 15                  | 45.5 | 18     | 54.5 | 33    | 100 |                |
| <b>School Support</b>        |                     |      |        |      |       |     |                |
| Support                      | 32                  | 53.3 | 28     | 46.7 | 60    | 100 | 0.323          |
| Not Supportive               | 27                  | 47.4 | 30     | 52.6 | 57    | 100 |                |
| <b>Family Support</b>        |                     |      |        |      |       |     |                |
| Supportive                   | 42                  | 57.5 | 31     | 42.5 | 73    | 100 | 0.037          |
| Not in favor                 | 17                  | 38.6 | 27     | 61.4 | 44    | 100 |                |

Source: Primary Data, 2025

The results of this study are in line with research (Waelan et al., 2020) conducted at SMAN 8 Kendari which shows that there is no significant relationship between knowledge about anemia and the incidence of anemia, with a p-value= 0.339 (p-value> 0.05). The results of this study are not in line with research at SMPN 4 Payakumbuh City, which shows that knowledge is related to behavior in consuming TTD, which ultimately contributes to

reducing the incidence of anemia. Another study by (Anggoro, 2020) at SMA Negeri 1 Kalibawang showed that a good understanding of anemia plays a role in shaping healthy attitudes and behaviors related to nutrition fulfillment, which in turn helps prevent anemia.

Knowledge about anemia affects the tendency of rematriates to choose foods that are rich in nutrients and high in iron (Sandala et al., 2022). Many female students are aware of the importance of iron consumption and anemia prevention, but not all of them are able or willing to implement it in their daily lives. In addition, limited access to nutritional sources, low levels of compliance in consuming TTD, and heavy menstrual factors that are not balanced with adequate iron intake also contribute to this problem. Therefore, the need for iron doubles during the menstrual period (Yanti et al., 2024).

This study shows that although many schoolgirls have good knowledge, it does not always make the incidence of anemia lower. This is due to other factors such as diet, menstrual frequency, or lack of iron intake that are not included in the students' general knowledge. Therefore, although most students have good knowledge, it is not enough to significantly reduce the incidence of anemia in class X SMA Negeri 6 SIDRAP.

### **Relationship between Health Worker Support and Anemia Incidence**

The results showed that support from health workers did not have a significant relationship with the incidence of anemia in SMA Negeri 6 SIDRAP students, with a Chi-square test value of  $p\text{-value} = 0.320$  ( $p\text{-value} > 0.05$ ). From the results of the analysis, it is known that 47.6% of female students who feel they have received support from health workers still experience anemia. This finding shows that the form of support provided has not covered all aspects of behavior comprehensively. One-way support, such as providing information without further monitoring, is likely not strong enough to encourage sustainable behavior change.

This study is in line with Rahmawati's (2024) study in SMK Al-Furqon North Banjarmasin, which also showed that education about the importance of Fe compounds from health workers has not resulted in a significant reduction in anemia. However, this finding contradicts the results of the study Astuti (2024) which showed that intensive support from health workers through group education and regular monitoring of TTD consumption can significantly improve compliance and reduce the prevalence of anemia.

To make health worker support more effective, the approach needs to be holistic. Health workers should not only act as information deliverers, but also as facilitators who build interpersonal relationships with adolescents, adapt educational materials to the language and context of adolescents, and use interactive educational methods such as group discussions, simulations, or attractive visual media. Regular monitoring, positive reinforcement (e.g. through rewards or feedback), and student involvement in school health activities can also increase the effectiveness of the intervention (Lubis et al., 2024)

Another key factor is the individual's response to the support. Improving individual response can be done by building adolescents' intrinsic motivation, for example through instilling the importance of health in supporting their academic, social and future activities. This can also be strengthened through psychological approaches such as brief counseling or reflection sessions, which help adolescents recognize personal barriers and find solutions to remain compliant with taking TTD. Thus, behavior change depends not only on the information provided, but also on the emotional engagement and internal motivation of the schoolgirls.

Therefore, although most schoolgirls have received information from health workers, their impact on the incidence of anemia is still limited. This suggests that health worker support must be more strategic, intensive, and tailored to the needs and

characteristics of adolescents in order to produce effective behavior change in preventing anemia.

### **Relationship between School Support and Anemia Incidence**

The results showed that support from schools did not have a significant relationship with the incidence of anemia, with a Chi-square test value of  $p\text{-value} = 0.323$  where ( $p\text{-value} > 0.05$ ). From the results of the analysis obtained, 46.7% of female students who felt they had received support from the school but still experienced anemia. This can be influenced by various factors, one of which is the lack of a monitoring system or direct supervision of compliance in consuming TTD.

In addition, the education delivered through socialization is not in-depth enough or not presented in a method that is interesting and relevant to the lives of adolescents, so it is unable to build long-term awareness and motivation. Support provided by teachers tended to encourage adolescents to consume TTD more often compared to those who received less support. Support from teachers, such as providing clear information and direct reminders, contributed to building adolescents' awareness and motivation to consume TTD regularly (Lubis et al., 2024).

These results are in line with research conducted by Sintawati (2024) at SMAN 1 Kabandungan. The study indicated that although the school provided support, such as counseling and TTD distribution, the level of compliance of female students in consuming TTD remained low, with a  $p\text{-value} = 0.000$  indicating an association between school support and compliance in TTD consumption. However, the support provided has not succeeded in significantly reducing the incidence of anemia (Sintawati et al., 2024). However, the results of this study are not in line with research conducted by Melvani (2023) at SMAN 1 Kebomas and SMAN 1 Sangkapura, Gresik Regency. The study indicated that the provision of TTD and education conducted actively, structured, and integrated with health programs can significantly reduce the incidence of anemia (Melvani et al., 2023).

Therefore, it can be concluded that support from educational institutions will be effective only if implemented in a comprehensive and sustainable manner. Simply providing supplements or counseling is not sufficient. Active involvement of teachers in health education, daily monitoring of TTD consumption, and regular evaluation of program implementation is essential. In addition, the delivery of education must be tailored to the characteristics of adolescents, involve appropriate psychological and social approaches, and utilize interesting and interactive media.

### **Relationship between Family Support and Anemia Incidence**

The results showed that family support had a significant relationship with the incidence of anemia in class X SMA Negeri 6 SIDRAP students, with a  $p\text{-value} = 0.037$  ( $p\text{-value} < 0.05$ ). However, 42.5% of students who felt they had received family support still experienced anemia. This suggests that the support provided by families may still be limited to verbal reminders or suggestions without being followed by direct supervision and active involvement in ensuring TTD consumption. Thus, the effectiveness of family support in shaping healthy habits is not optimal.

The role of family, especially parents, is very important as a source of information, supervisor, and motivator in encouraging adolescent girls to consume TTD regularly. Parents can play a role in educating children about the importance of anemia prevention, ensuring children take TTD on schedule, and creating a home environment that supports nutritious eating patterns. This active involvement contributes to the formation of personal health awareness and responsibility since adolescence (Lubis et al., 2024).



The results of this study are in line with research conducted by Estiyani (2020) which shows that family support is significantly associated with the incidence of anemia in adolescent girls, because the family plays a role in reminding TTD consumption and ensuring adequate nutritional intake. In contrast, this result is not in line with research by Harlisa (2023) which states that family support does not show a significant relationship with adherence to TTD consumption. This difference in results could be due to variations in social context, culture, or family support approaches in each study area.

The findings in this study provide important practical implications for intervention at SMA Negeri 6 SIDRAP. Given that family support proved to be significant, schools and health workers could develop more structured programs to actively engage parents. Strategies that could be implemented include organizing educational classes or workshops for parents, integrating health messages in guardian meetings, providing TTD pocketbooks or leaflets to take home, and using school social media to deliver weekly reminders of TTD consumption to families. In addition, schools can coordinate with Puskesmas to involve families in screening programs and follow-up of adolescent health outcomes, thus creating a joint monitoring system.

Although this study makes important contributions, there are several limitations that need to be considered. First, the cross-sectional research design does not allow for inference of cause-and-effect relationships between variables. Second, some of the data was collected through self-report questionnaires, which are prone to social bias and misperception. Third, the context of the study, which involved only one school in a particular region, limits the generalizability of the findings to a wider population of adolescent girls. Therefore, further research with a longitudinal design and involving various school settings would be beneficial to deepen the understanding of the role of family in anemia prevention.

## CONCLUSION

Based on the results of research on Class X SMA Negeri 6 SIDRAP students, it shows that there is no significant relationship between students' knowledge ( $p\text{-value} = 0.133$ ), health worker support ( $p\text{-value} = 0.320$ ), and school support ( $p\text{-value} = 0.323$ ) with the incidence of anemia. In contrast, family support had a significant relationship with the incidence of anemia ( $p\text{-value} = 0.037$ ). These results illustrate that the attention and active role of the family is very important in efforts to prevent anemia in rematriates. Therefore, more optimal collaboration between families, schools, and health workers needs to be improved to create an environment that supports the overall health of adolescents.

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## REFERENCES

- Adri, K., Arsin, A., Thaha, R. M., & Hardianti, A. (2020). Risk Factors for Type 2 Sidrap Regency *Journal of Maritime Public Health*,3 (1), 101-108. <https://doi.org/10.30597/jkmm.v3i1.10298>
- Aliyah, N., & Krianto, T. (2023). Knowledge in the Consumption Behavior of Blood Additive Tablets in Adolescent Girls in Cimanggis District, Depok City in 2023. *Journal of Nursing and Public Health*,11 (2), 426-435.

- <https://doi.org/10.37676/jnph.v11i2.5173>
- Anggoro, S. (2020). Factors Affecting the Incidence of Anemia in High School Girls. *Scientific Journal of Permas: Scientific Journal of STIKES Kendal*,10 (3), 341-350. <http://download.garuda.kemdikbud.go.id/article.php?article=1742402&val=17145&title=Factors Affecting The Event Of Anemia In High School Students>
- Ariani, A., Wijayanti E.D, D., Yuliantini, A., Siti Nurfitriana, R., Mulyana, A., & Ermilda. (2023). Lifestyle Education, Healthy Snacking Patterns and Administration of Abc (Apple Bit Carrot) Juice for Anemia Prevention in Adolescent Girls. *Journal of Community Service Creativity (PKM)*, 6(4), 1462-1474.
- Astuti, K. E. W., & Rosalinna, R. (2024). The Optimizing of Adolescent Posyandu in Preventing Anemia in Adolescent Girls. *Abdikemas Journal*,6 (2), 101-107. <https://doi.org/10.36086/j.abdikemas.v6i2.2668>
- Estiyani, A. (2020). The Relationship of Family Support to the Consumption of Blood Additive Tablets (TTD) with the Incidence of Anemia in Adolescent Girls. *Mutiara Mahakam Midwifery Journal*,8 (1), 71-76. <https://doi.org/10.36998/jkmm.v8i1.83>
- Febrianti, D., Sulaiman, Z., Mardhatillah, Said, S., Adri, K., & Ramlan, P. (2023). Implementation of the Use of Social Media in the Health Promotion Program at the Enrekang City Health Center. *Indonesian Health Promotion Publication Media (MPPKI)*,6 (4), 621-626. <https://doi.org/10.56338/mppki.v6i4.3030>
- Fitria, A., Aisyah, S., & Sari Tarigan, J. (2021). Efforts to Prevent Anemia in Adolescent Girls Through Consumption of Blood Addition Tablets. *RAMBIDEUN: Journal of Community Service*,4 (2), 91-99. <https://doi.org/10.51179/pkm.v4i2.545>
- Harlisa, N., Wahyurianto, Y., Puspitadewi, T. R., & Sumiatin, T. (2023). Knowledge, Motivation, and Family Support with Adherence of TTD Consumption among Adolescent Girls at SMAN 5 Tuban. *Tambusai Journal of Education*,7 (3), 20427-20435. <https://jptam.org/index.php/jptam/article/view/9507>
- Hasibuan, Y. N. (2022). Factors Associated with the Incidence of Anemia in First Trimester Pregnant Women at Puskesmas Sangkunur Angkola District .... *Thesis*. [https://repository.unar.ac.id/jspui/handle/123456789/3051%0Ahttps://repository.unar.ac.id/jspui/bitstream/123456789/3051/1/Skripsi - Yusrotun.pdf](https://repository.unar.ac.id/jspui/handle/123456789/3051%0Ahttps://repository.unar.ac.id/jspui/bitstream/123456789/3051/1/Skripsi%20Yusrotun.pdf)
- Indonesian Ministry of Health. (2021). *Riskesdas Result Report 2021*. <https://pusdatin.kemkes.go.id>
- Lasso, C. K. R. (2023). Barriers to Access to Health Services at Health Centers in Indonesia: Scoping Review. *Permas Scientific Journal: Scientific Journal of STIKES Kendal*,13 (October), 1-8.
- Lestari, R. A., & Handayani, O. W. K. (2023). Multilevel Analysis of the Relationship between School Ecology and Adherence to Blood Additive Tablet Consumption of Female High School Students in Semarang City. *Journal of Health*, 16(3), 255-267.
- Lindawati, R. (2023). Analysis of Factors Associated with Adherence to Fe Tablet Consumption in Adolescent Girls at Sma Negeri 3 Serang City, Banten Province in 2022. *Journal of Health Science Research Innovation*, 1(1), 239-255.
- Lubis, D. W., Sari, M. P., & Asiah, N. (2024). Factors of Adolescent Girls' Blood Addition Tablet Consumption in SMA Negeri 2 Cileungsi. *Indonesian Journal of Science*, 1(6), 1283-1289.
- Mardhatillah, M., Febrianti, D., Sulaiman, Z., & Said, S. (2021). The Relationship between Students' Knowledge of Hiv and Aids with Stigma towards Odha at SMAN 5 Makassar. *Journal of Education*, 5(1), 451-457.
- Marfiah, M., Putri, R., & Yolandia, R. A. (2023). The Relationship of Information Sources, School Environment, and Family Support with Anemia Prevention Behavior in

- Adolescent Girls at SMK Amaliyah Srengseng Sawah in 2022. *SENTRI: Journal of Scientific Research*, 2 (2), 551-562. <https://doi.org/10.55681/sentri.v2i2.559>
- Melvani, N. A., Rohmawati, F., Mawaddah, S., Karyati, A., & Inayah, Z. (2023). The Effect of Providing Blood Addition Tablets and the Prevalence of Anemia in Senior High School Students in Gresik Regency. *Tambusai Health Journal*, 4(3), 1860-1865.
- Mukharomah, U., & Budiono, I. (2024). Determinants of Compliance Behavior in Consuming Blood Supplement Tablets in Adolescent Girls. *Journal of Health*, 17 (1), 12-24. <https://doi.org/10.23917/jk.v17i1.2527>
- Nadiya, Hasan, C., & Mansur Sulolipu, A. (2023). An Overview of Blood Additive Tablet Consumption Behavior of College Students at the Faculty of Public Health UMI in 2023. *Window of Public Health Journal*, 4 (5), 774-785. <https://doi.org/10.33096/woph.v4i5.1275>
- Nurjanah, A., & Azinar, M. (2023). Adherence of Adolescent Girls' Blood Addition Tablet Consumption at a Reproductive Health and Sexuality Pilot School. *HIGEIA (Journal of Public Health Research and Development)*, 7 (2), 244-254. <https://doi.org/10.15294/higeia.v7i2.64227>
- Prayudhistya, B. A., Syahadatina Noor, M., Istiana, I., Juhairina, J., & Sterina Skripsiana, N. (2023). The Relationship of Family Support with Adherence to Blood Addition Tablet Drug Consumption in Adolescent Girls at SMAIT Ukhuwah Banjarmasin. *Homeostasis*, 6 (1), 9-16. <https://doi.org/10.20527/ht.v6i1.8783>
- Rahmawati, R., Farik, A. A., Atika, N. K., Akifah, G., & Fajeriyati, N. (2024). Education on the Importance of Fe Compound in Overcoming Anemia in Adolescent Girls. *Panacea Community Service Journal*, 2(1), 30-36.
- Ramlan, P., Haslindah, Trisnasari, D., & Cahyani, A. (2024). *Tilapia Fish Nugget Production Assistance for Nonproductive Housewives in Damai Village, Sidenreng Rappang*. 5(4), 1431-1439.
- Said, S., S, Z., Febrianti, D., & Mardhatillah. (2020). Counseling Competence of Health Promotion Officers in the Sidenreng Rappang District. *Pertiwi Health Journal*, 2(2), 154-160.
- Sandala, T. C., Punuh, M. I., & Sanggelorang, Y. (2022). Overview of Knowledge about Iron Nutritional Anemia in Adolescent Girls at SMA Negeri 3 Manado. *KESMAS Journal*, 11(2), 176-181.
- Sintawati, S., Santi, A. S., & Fatimah, J. (2024). The Relationship of Knowledge Attitude and School Support to Adherence of Fe Tablet Consumption in Adolescent Girls at SMAN 1 Kabandungan in 2023. *SENTRI: Journal of Scientific Research*, 3(3), 1394-1400.
- Statistics, central agency. (2023). *Disease Cases by District/City and Type of Disease in South Sulawesi Province, 2023*. <https://sulsel.bps.go.id/id/statistics-table/3/YTA1Q1ptRmhUMEpXWTBsQmQyZzBjVzgwUzB4aVp6MDkjMw==/kasus-penyakit-menurut-kabupaten-kota-dan-jenis-penyakit-di-provinsi-sulawesi-selatan--2023.html>
- Suaib, F., Sahariah Rowa, S., & Adwiah, W. (2024). The Relationship between Adherence to Blood Addition Tablet Consumption and the Incidence of Anemia in Adolescent Girls. *Makassar Health Polytechnic Health Media*, 19 (1), 71-76. <https://doi.org/10.35325/kebidanan.v14i1.404>
- Sulaiman, Z., Ramlan, P., Said, S., Adri, K., Febrianti, D., Mardhatillah, Tamrin, M., Herman, B., Haslindah, Yasmin, M., Yakub, R., Ramadhan, M. R., Cahyani, A., & Kurniawan, T. (2024). Education Design (Clean and Healthy Living Behavior) in Schools. In *Eureka Media Aksara*.

- Waelan, I., Savitri Effendy, D., & Harleli. (2020). The Relationship Between Knowledge and Nutritional Status with the Incidence of Anemia in Adolescent Girls of SMAN 8 KENDARI in 2020. *Indonesian Journal of Nutrition and Health*, 1 (3), 114-120. <https://doi.org/10.47859/jmu.v5i2.156>
- Wandasari, D. Y. (2022). Factors that Affect the Incidence of Anemia in Adolescent Girls in the Wonosalam *Health*, 12-26.
- Widya, E., & Kasni, A. K. (2024). Analysis of Determinant Factors of Blood Addition Tablet Consumption Behavior in Students at SMPN 4 Payakumbuh City. *Mirai Management Journal*, 9(3), 126-141.
- Yanti, R., Murni, N. S., Suryani, L., & Harokan, A. (2024). Determinants of Noncompliance with Taking Blood Addition Tablets in Adolescent Girls at SMA Negeri 1 Kayuagung in 2024. *Journal of Health*, 13(2), 406-411.
- Yudina, M. K., & Fayasari, A. (2020). Evaluation of the Blood Addition Tablet Program for Adolescent Girls in East Jakarta. *Scientific Journal of Health (JIKa)*, 2(3), 147-158.