

The relationship between knowledge and compliance to consuming blood added tablets in adolescents' women: A literature review

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Abstract

Introduction: Iron deficiency anemia is a significant public health concern, particularly among adolescent girls, due to their increased iron requirements during periods of rapid growth and menstruation. The World Health Organization (WHO) estimates that over one-third of adolescent girls in developing countries suffer from anemia, which can lead to reduced cognitive and physical performance, weakened immunity, and complications during pregnancy later in life. Knowledge plays a crucial role in shaping health behaviors. Adolescents with a better understanding of anemia and the importance of iron supplements are more likely to adhere to the prescribed regimen. This adherence is essential for ensuring the effectiveness of the intervention in reducing anemia prevalence.

Method: This study is a literature review, drawing from sources in Google Scholar, PUBMED, and Science Direct, focusing on research published between 2020 and 2024. The study included only original research articles in English or Indonesian with all the required components.

Result and Discussion: From the literature search, 10 studies met the inclusion criteria. Among them, 9 studies found a correlation between knowledge and compliance to consuming blood added tablets, while 1 study found no correlation.

Conclusion: According to reviews, knowledge is associated compliance to consuming blood added tablets in adolescents, although some studies have not shown an association.

Keywords: Knowledge; Compliance; Blood added tablets; Adolescents; Anemia

1. Introduction

In adolescents, anemia is caused by various things, including iron deficiency, vitamin B12 deficiency, folic acid deficiency, impaired iron absorption, abnormal menstrual patterns, infectious diseases, lack of knowledge regarding nutrition and anemia, and not regularly consuming tablets.added blood (1). WHO recommends in the 65th World Health Assembly (WHA) explain in the 2021 edition of the Global Anemia Estimates that anemia is an indicator of poor health and nutrition that can affect the economic development of a country, so that anemia can be said to be a global health problem in the world. The global target is to reduce anemia rates in women of reproductive age by 50% by 2025 (2). Knowledge is what underlies a person's behavior after they use the five human senses, namely sight, hearing, smell, taste and touch, to sense a particular object (3).

Knowledge is the result of knowing, which occurs after people sense certain objects. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste and touch. Knowledge is the result of remembering something, including remembering events that have been experienced either intentionally or unintentionally and occurs after people make contact with or observe a particular object (4).

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Compliance is a thing behavior change of behavior who do not comply with the rules. Compliance issues are obstacles to daily iron supplementation, because it's to look after compliance with supplement consumption iron can be held with attempt to take supplements iron directly in front of the officer, by sending a message brief to the research sample (5). Compliance with consuming blood added tablets has a significant relationship with increasing hemoglobin levels in adolescent girls. The effect of giving blood added tablets on increasing HB levels shows that giving blood added tablets is effective in preventing anemia in adolescent girls (6).

Adolescents are one particular group whose efforts to increase iron are not sufficient if only by changing their food consumption behavior. Therefore, one of the prevention programs carried out by the government is blood supplementation tablets (7). Insufficient intake of protein nutrients can also cause anemia in young women. Consume energy-producing foods with a variety of food sources (8). Good nutritional knowledge about anemia will influence the tendency of young women to choose food sources of iron, avoid iron-inhibiting foods, and comply with consuming blood supplement tablets (9).

This study aims to find out more about the relationship between knowledge and compliance to consuming blood added tablets in adolescents. The goal is to improve the understanding of health professionals and adolescents, enabling them to anticipate and mitigate risks factors associated with anemia. Raising awareness about this condition is critical to reducing its impact physical and psychological well-being of adolescents, ensuring their overall quality of life

2. Material and methods

This article is a literature review that examines 10 selected articles based on certain inclusion criteria. Selected articles present original research findings on the relationship between knowledge and compliance to consuming blood added tablets, especially in adolescents. Articles published between 2020 and 2024 (in the last four years) and in English or Indonesian. Exclusion criteria were applied to all articles that discussing knowledge and compliance consuming blood tablets using methods other than original research. Articles sourced from several basic data including Google Scholar, PUBMED, and Science Direct. Each article displayed will be analyzed descriptively, which includes the author and year of publication, research location, research method, research subject, and summary of research findings.

3. Results

Ten articles— seven in Indonesian and three in English—have been reviewed and analyzed as follows.

Table 1 Results of Review of 10 Articles

No	Author	Research Title	Location	Method	Subject	Result
1	Nasir, Y., <i>et al.</i> (2024).	Hubungan Pengetahuan Anemia dengan Kepatuhan Mengonsumsi Tablet Tambah Darah pada Remaja Putri di Wilayah Kerja Puskesmas Turikale	SMPN 1 Turikale, Indonesia.	Quantitative analysis with cross sectional study.	108 female students of SMPN 1 Turikale	59.3% of young women have good knowledge about anemia and 40.7% have poor knowledge. Apart from that, it showed that only 37.0% of young women were obedient to taking blood supplement tablets and 63.0% of young women were not obedient to taking blood blood tablets according to instructions. There is a relationship between knowledge about anemia and compliance with

						consuming blood supplement tablets. blood in class VIII teenage girls at SMPN 1 Turikale with a significance level of p-value of 0.000.
2	Riawati D. (2021)	Hubungan Pengetahuan dengan Konsumsi Tablet Tambah Darah pada Remaja Putri	Pondok Pesantren Tahfidzul Qur'an (PPTQ) Ibn Abbas Klaten, Indonesia.	Analytical survey research with a cross sectional approach.	30 female students of class X IPS 2	The majority of knowledge about blood-added tablets were good as many as 16 respondents (53%) and the majority of consumption of blood-added tablets were irregular as many as 19 respondents (63%). There is a relationship between knowledge and consumption of blood-added tablets with a significant level of 0.01.
3	Wahyuningsih A., <i>et al.</i> (2020)	Hubungan Pengetahuan dengan Kepatuhan Konsumsi Tablet Tambah Darah Remaja Putri di SMP N 1 Karangnongko	SMP N 1 Karangnongko, Indonesia.	Descriptive correlation with cross sectional approach.	247 female students of SMP N 1 Karangnongko	The majority of young women's knowledge regarding blood supplement tablets at SMP N 1 Karangnongko was quite knowledgeable, as many as 21 respondents (55%). 9%). The results of this study show that there is a relationship between knowledge and compliance with the consumption of blood supplement tablets at SMP N 1 Karangnongko. The statistical test with chi square was obtained with a p value = 0.001 (p<0.05).
4	Rahayu R., <i>et al.</i> (2024)	Hubungan Tingkat Pengetahuan Anemia dengan Kepatuhan Konsumsi Tablet Tambah Darah	SMPN 1 Kalijati, Subang Regency, Indonesia.	Quantitative type of research with a cross sectional approach.	210 female students of class VII SMPN 1 Kalijati	Based on the results of the Spearman rank correlation test, the p-value was 0.001, which was smaller than the p-value <0.05 and the

		pada Remaja Putri di SMPN 1 Kalijati				coefficient value was 0.855, which stated that the relationship between variables was very strong in a positive direction. So it can be seen that there is a very strong relationship between the level of anemia knowledge and compliance with the consumption of blood supplement tablets among young women at SMPN 1 Kalijati, Subang Regency.	
5	Runiari N., <i>et al.</i> (2020)	Hubungan Pengetahuan dengan Kepatuhan Minum Tablet Tambah Darah pada Remaja Putri	SMA Denpasar Regency, Indonesia	6	Correlational analytic with cross sectional approach.	149 female students of class XI SMA 6 Denpasar	The research results show that most respondents' level of knowledge many are in the quite good category as much as 44.3%. found to still exist as many as 21.5% of respondents with poor knowledge. Respondent compliance level 87 people (58.4%) drank TTD with low compliance. Analysis results with Kendall Tau found p value 0.03 meaning there is a relationship between knowledge with adherence to taking additional tablets blood.
6	Murnariswari K., <i>et al.</i> (2021)	Hubungan Sikap dan Pengetahuan Siswi terhadap Kepatuhan Konsumsi Tablet Tambah Darah	SMPN Bekasi City, Indonesia	26	A research survey with cross sectional design.	340 female students of class 8 and 9 SMPN 26 Bekasi City	It can be seen that respondents who have level of knowledge in the categories lacking and not consuming TTD, namely (58.8%). That amount smaller compared to respondents who have good knowledge and consumption blood supplement tablets amounted to (82.1%). Next, the p-value analysis is

						0.002 (<0.05). Shows that there is a meaningful relationship between the level of knowledge and the level of compliance consume blood increasing tablets.
7	Niza, A. W., <i>et al.</i> (2024)	The Relationship Between Knowledge and Attitude About Anemia with Compliance to Consume Iron Supplement Tablets in Female Adolescents of Grade X at State Senior High School 13 Surabaya	SMA Negeri 13 Surabaya, Indonesia	Analytic observational with a cross sectional approach.	208 female students of grade X SMA Negeri 13 Surabaya	In grade X of SMA Negeri 13 Surabaya, 10.3% of adolescent girls have a good understanding of anemia, 64.7% have sufficient knowledge, and 25% have less knowledge. A total of 18 female students (26.5%) showed adherence to the consumption of blood-added tablets, while 50 female students (73.5%) did not comply. In addition, this study assessed the relationship between knowledge and attitudes related to anemia with adherence to the consumption of blood-added tablets in grade X adolescent girls of SMA Negeri 13 Surabaya. With a P value for knowledge of $0.635 > 0.05$ and a P value for attitude of $0.288 > 0.05$, the results of this study showed that there was no significant relationship between knowledge and attitudes related to anemia with adherence to the consumption of blood-added tablets in grade X adolescent girls of SMA Negeri 13 Surabaya.

8	Y NM, Kandasamy S., <i>et al.</i> (2024)	Adherence to weekly iron folic acid supplementation and associated factors among adolescent girls - A mixed-method study	Model Rural Health Research Unit (MRHRU) field practice area, Kallu	Cross sectional study with a mixed method	972 adolescent girls	The overall number of girls who were aware of Iron Folic acid therapy (IFAT) was 704 (72%). However, only 132 (13%) adolescent girls were found to be adherent to IFA therapy. Multivariable regression analysis revealed that side effects encountered on intake of IFAT (Odds ratio (OR) =0.5, P = 0.009) were associated with higher rates of nonadherence, whereas regular supply (OR = 13.6, P = 0.000), health education to parents (OR = 2.76, P = 0.002), and experiencing benefits (OR = 1.72, P = 0.006) were associated with higher rates of adherence. These were substantiated by qualitative findings
9	Salam SS., <i>et al.</i> (2023)	Impact of a school-based nutrition educational intervention on knowledge related to iron deficiency anaemia in rural Karnataka, India: A mixed methods pre-post interventional study	Three government schools in Bagalkot, Belagavi and Raichur districts of Karnataka, India.	A mixed methods pre-post interventional study	Students of grade six and seven and teachers involved in implementing the intervention.	The percentage of children with correct scores increased by 7.3–49.0 percentage points for the tested questions after implementation of the intervention. The mean knowledge score increased by 3.67 ± 0.17 ($p < 0.01$). During interviews, teachers and students highlighted high acceptance of the intervention and materials, an increase in awareness, a positive attitude towards changing behaviour around diet, an increase in the demand for iron and folic acid

						supplements and improved sharing of messages learned with peers and families. Challenges expressed included need for further training, time limitations and hesitancy in teaching about menstruation and pregnancy.
10	Wiafe MA., <i>et al.</i> (2021)	Knowledge and practices of dietary iron and anemia among early adolescents in a rural district in Ghana.	Asante-Akim South Municipal, a rural district in Ghana.	cross-sectional study	A total of one hundred and thirty-seven (137) early adolescents (10–14 years old).	Estimated Average Requirement for dietary iron intake (Chi-square 3.4, $p = .073$), while more dried fish consumers (88%) than nonconsumers (66.7%) had normal hemoglobin levels (Chisquare 4.5, $p = .050$). Knowledge of food sources of iron and iron-rich foods was positively associated with intake of chicken, fresh fish, and dried fish. Moreover, lower knowledge of iron-based food sources ($\beta = -1.015$, $p = .020$) and iron-rich foods ($\beta = -2.188$, $p = .015$) was inversely associated with beef intake. Anemia was negatively associated with chicken ($\beta = -0.310$, $p = .416$) and dried fish ($\beta = -1.299$, $p = .045$) consumption. Majority of the adolescents had low knowledge of iron.

4. Discussion

4.1. Correlation between knowledge and compliance to consuming blood added tablets

Based on a review of 10 articles, 9 articles showed a significant correlation between knowledge and compliance to consuming blood added tablets in adolescents. Knowledge in this good category is influenced by information obtained from the surrounding environment, so more information about blood supplement tablets will be obtained, so

knowledge will improve. However, one article found no significant association between knowledge and consuming blood added tablets.

A study conducted at an SMPN 1 Turikale showed that female students' knowledge data showed that the distribution of knowledge levels was good and poor (59.3% and 40.7% respectively). There is a relationship between female students' knowledge about anemia and compliance with taking blood supplement tablets and the value obtained can be seen from the results of the chi-square test ($p\text{-value } 0.000 > 0.05$) (10). The results of this study confirm previous research (Tirthawati et al., 2020) which found a correlation ($p=0.004$) between awareness of anemia and the frequency of young women at SMK Negeri 1 Bangsri using blood supplement pills. This research is in line with Nuzrina's 2021 research which found a relationship between knowledge of blood supplement tablets and adherence to taking medication ($p=0.002$). This study supports L. Green's idea that individuals' motivation to act can be traced, at least in part, to their level of information about the world (11).

Research by Wahyuningsih A., et al, showed on adolescent girls' knowledge about blood supplement tablets showed that of the 38 respondents, 21 respondents (55.3%) had sufficient knowledge and 17 respondents (44.7%) had good knowledge. According to researchers, knowledge in the good category is influenced by information obtained from the surrounding environment, so the more information about blood supplement tablets that is obtained, the better the knowledge (12). The consumption of blood-boosting tablets in teenagers is also influenced by the lack of interest in consuming blood-boosting tablets as a blood-boosting supplement. This is because individuals feel they are not sick and do not need supplementation and they are less likely to receive the side effects that usually arise from blood supplement tablets (13).

In a study conducted Asante-Akim South Municipal, a rural district in Ghana, participants had low knowledge of iron deficiency anemia, causes, consequences, and prevention. Few adolescents had knowledge of food sources of iron, iron-rich, iron-enhancing, and iron-inhibiting foods. Participants showed no consumption of insects, prawns, shrimps, seafood, pork, rabbit, dog and very low intake of liver, kidney, and heart. Knowledge of food sources of iron and iron-rich foods improved intake of chicken, fresh, and dried fish except for beef. Dried fish and chicken intake reduced the occurrence of anemia. Stakeholders in promoting adolescent health should intensify nutrition education on iron (14).

Likewise, research Riawati D, the results of this research were that the majority of respondents had good knowledge, 6 respondents (53%). Knowledge is influenced by education, information, social economic culture and experience. Even though it's the majority His knowledge is good but there is no PPTQ Ibnu Abbas Klaten yet counseling about blood supplement tablets and there has been no movement to take tablets add blood every Friday as encouraged by the government, this supports the research results that respondents who have never Get information about the importance of consuming blood supplement tablets will cause the behavior of drinking/consuming tablets to increase blood not enough (15). This good knowledge can come from previous information obtained through mass media. This is in accordance with Dewi's (2020) research that most of the students are female have good knowledge (88/51.46%) because they have done it sensing through reading or listening to information about consume blood supplement tablets which can be accessed from various media (16).

Runiari N., et al., reported that the knowledge level of the respondents was mostly in the good enough category as much as 44.3%. It was found that 21.5% of respondents had poor knowledge. The level of adherence of respondents to drink iron tablets was 87 people (58.4%) with low adherence and 62 people (41.6%) had moderate adherence. The results of the analysis with Kendall Tau found a $p\text{-value}$ of 0.03, which means that there is a relationship between knowledge and adherence to taking blood supplement tablets. Furthermore, it is suggested to increase the involvement of parents in monitoring the drinking of iron tablets (17).

In the study by Rahayu R., et al., from the results of research from 67 respondents, we can see that the level of knowledge about anemia among young women is that the majority (55.2%) of respondents had a poor level of knowledge. This is because the outreach program from the Kalijati Community Health Center has not been comprehensive for young women, especially at SMPN 1 Kalijati regarding anemia, so the level of knowledge in this research is lacking. As is the case with research by Jasmianti et al (2023) who argue that in the end, teenagers' lack of knowledge about anemia causes them to pay less attention to food choices and prevention of health problems, especially anemia. As a result, teenagers are at risk of developing anemia (18).

Meanwhile, in the study by Niza, A. W., et al, in addition, this study assessed the relationship between knowledge and attitudes related to anemia with adherence to the consumption of blood-added tablets in grade X adolescent girls of SMA Negeri 13 Surabaya. With a P value for knowledge of $0.635 > 0.05$ and a P value for attitude of $0.288 > 0.05$, the results

of this study showed that there was no significant relationship between knowledge and attitudes related to anemia with adherence to the consumption of blood-added tablets in grade X adolescent girls of SMA Negeri 13 Surabaya (19).

5. Conclusion

A review of ten journal article revealed that most of them showed an association between knowledge and compliance to consuming blood added tablets. Knowledge has a significant effect on compliance; the more knowledge a person has, the more they will comply with the relevant standards. Knowledge is the first step in forming compliance behavior. Prevention of anemia can be done by improving the behavior of young women. One of the influencing factors Adolescent behavior in preventing anemia is knowledge. Knowledge that less about blood increasing tablets will influencing adolescent girls' compliance. Adolescents' compliance in taking blood supplement tablets according to recommendations from health workers is very important for adolescents in preventing anemia in adolescents.

Compliance with ethical standards

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