BKM Public Health & Community Medicine
(Berita Kedokteran Masyarakat)

Volume 38 **Number** 7, 2022
Pages 255-260
DOI: 10.22146/bkm.v38i7.1725

Evaluation of iron-folic acid supplementation in young women in Mataram City

Eka Suci Kantari[1], Emy Huriyati[2], Mirza Hapsari Sakti Titis Penggalih[2]

Submitted:
April 21th, 2021
Accepted:
June 9th, 2022
Published:
July 30th, 2022

[1]Department of Biostatistics, Epidemiology, and Population Health, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

[2]Department of Health Nutrition, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

Correspondence:
Eka Suci Kantari
ekasucikantari@gmail.com

Abstract

Purpose: The government program to prevent iron deficiency anemia in adolescent girls provides iron-folic acid supplementation, usually known as TTD or "Tablet Tambah Darah". The number of adolescent girls who received TTD was 76.2%, whereas 80.9% were given at school, and the rest were from other sources. The obedience of young women to consuming TTD is one factor that affects the effectiveness of the TTD program. **Methods:** This research was a cross-sectional study of a non-experimental design survey. The study sample was 159 people, 15-to 18-year-old adolescent girls of SMAN 5 Mataram. **Results:** Bivariate analysis showed that attitudes and obstacles were not statistically related to compliance, as seen from the attitude value p-value = 0.052 and resistance p-value 0.135. Obstacles have a relationship with attitudes with a value of p = 0.01. **Conclusion:** Attitudes and obstacles have no relationship to obedience in adolescent girls, while obstacles have a relationship with attitudes towards adolescent girls.

Keywords: adherence; behavior; iron folic acid supplementation; obstacles

INTRODUCTION

Anemia is a condition where the number of red blood cells is below normal (<12 g/dL). One of the causes of anemia is iron deficiency, as iron plays an essential role in the formation of hemoglobin, a component of red blood cells/erythrocytes. Those who are vulnerable to iron deficiency anemia are teenage girls because teenage girls experience menstruation every month. Menstruation causes teenage girls to lose a lot of blood and can lead to anemia. Adolescent girls need 15 mg of iron per day [1].

The prevalence of anemia in 2018 was 46.9% in pregnant women and 48.9% in adolescents. This prevalence is considered relatively high. In terms of prevalence, anemia is more common among adolescents. Anemia in adolescents can significantly impact immunity, concentration, academic performance, and health. The health of adolescents dramatically determines the success of health development, especially the quality of producing the nation's next generation.

Based on the results of Riskesdas (2018), 76.2% of adolescent girls received TTD, 80.9% received TTD at school, and 19.1% did not obtain it from school. Adolescent girls are required to take iron tablets every

month to replace the iron lost due to menstruation. In addition, TTD can also meet the iron needs that cannot be fully obtained from food [2].

Nationally, 10% of adolescent girls consume iron supplement tablets at a preventive dose, which means taking one tablet daily for 10 consecutive days during menstruation and one tablet per week. Thus, the total dose of iron tablets adolescent girls receive over 30 days is 13 [3]. Government programs aimed at addressing anemia do not always run effectively. Several factors influence the effectiveness of iron supplementation programs, including the quality of iron supplementation, the method of socialization for adolescent girls, the role of parents, the cooperation between schools and stakeholders in this matter, and the training of educators [4].

According to data from the Mataram City Health Office in 2019, the working area of the Mataram City Health Center has the highest number of school-aged adolescents with anemia compared to other health centers. The number of students examined was 988, with 305 (30.87%) experiencing anemia. In addition, factors related to the intention to consume TTD in Mataram have not been widely studied. Therefore, the researcher chose high schools and equivalent institutions within the working area of the Mataram City Health Center to examine the relationship between attitudes and compliance of adolescent girls and the barriers to consuming TTD. This research is also expected to serve as input for the Mataram City Health Office in achieving the success of the TTD distribution program to prevent anemia in adolescent girls in Mataram City.

METHODS

This research uses a quantitative research method with a survey (non-experimental) research design. Data were collected using cross-sectional research. The population of this study is the female students of SMAN 5 Mataram. This research was conducted in October - November 2020. The inclusion criteria for the research subjects are female adolescents aged 15-18 years who have already experienced menstruation and are willing to participate in the study. The exclusion criteria for the study are withdrawing from the ongoing research and transferring schools during the study. Bivariate data analysis used the Chi-Square test.

The independent variable in this study is compliance, the dependent variable is obstacles, and the intervening variable is attitude. Respondents are assessed on questionnaires regarding attitude, compliance, and obstacles. The external variable of this research is TTD consumption. The instrument used in this study is a Google Form-based questionnaire that refers to attitudes, compliance, and barriers to the provision of TTD among adolescent girls.

The data analysis used in this research is univariate and bivariate. Univariate analysis is used to see the general picture or distribution of each variable in the study. This study will describe the characteristics of respondents, compliance attitudes, and barriers adolescent girls face regarding the consumption of iron supplementation tablets [5]. Meanwhile, bivariate analysis was conducted using cross-tabulation and the Chi-Square test to examine the statistical significance of the relationship between independent and dependent variables [6].

RESULTS

Respondent characteristics

Based on Table 1, the most significant number of respondents are aged 17, with 81 people (51%), followed by those aged 16, with 42 people (26.4%), and those aged 18, with 36 people (22.6%). The height of most teenage girls is above 155cm, with 106 people (67%) in this category, and the average weight is mostly between 40-50 kg, with 75 people (47.2%).

Table 1. Distribution of respondents' characteristics (n=159)

Characteristics		n	%
Age (years)			
	15-16	42	26.4
	16-17	81	51
	17-18	36	22.6
Height (cm)			
	<155	37	23
	155	16	10
	>155	106	67
Weight (kg)			
	<40	7	4.4
	40-50	75	47.2
	50-60	51	32.1
	60-70	16	10.1
	>70	10	6.2

Univariate analysis

Table 2 shows that respondents with a good attitude are more numerous, 86 (54.09%), while respondents with a less good attitude are 73 (45.91%). Poor compliance is more prevalent at 112 (70.44%), while respondents with good compliance number 47 (25.56%). Respondents without obstacles numbered 131 (82.39%), while respondents with obstacles numbered 28 (17.61%).

Table 2. Overview of attitudes, compliance, and barriers to iron tablet consumption among adolescent girls

	n	%
Attitude		
Less	73	45.91
Good	86	54.09
Compliance		
Less	112	70.44
Good	47	25.56
Barriers		
No	131	82.39
Yes	28	17.61

Bivariate analysis

Based on Table 3, 57 (78.08%) teenage girls with a poor attitude have low compliance. As many as 16 (21.92%) adolescent girls with a poor attitude have good compliance. Meanwhile, 55 (63.95%) adolescent girls with a good attitude have poor compliance, and 31 (36.05%) adolescent girls with a good attitude have good compliance. Based on the Chi-Square test results, a p-value of 0.052 was obtained, which was more significant than 0.05. Thus, it can be concluded that there is no significant relationship between attitude and compliance among female adolescents at SMAN 5 Mataram.

Table 3. Relationship between attitude, behavior, obstacles, and adherence of adolescent girls to TTD administration

Attitude	Compliance (%)		Total	p-value
	Less	Good		
Less	57 (78.08)	16 (21.92)	73 (100)	0.052
Good	55 (63.95)	31 (36.05)	86 (100)	
Barriers	**Compliance (%)**		**Total**	**p-value**
	Less	**Good**		
Yes	23 (82.14)	5 (17.86)	28 (100)	0.135
No	89 (67.94)	42 (32.06)	131 (100)	
Barriers	**Attitude (%)**		**Total**	**p-value**
	Less	**Good**		
Yes	19 (67.86)	9 (32.14)	28 (100)	0.01
No	54 (41.22)	77 (58.78)	131 (100)	

The analysis of the relationship between obstacles and compliance shows that 23 (82.14%) adolescent girls who experienced obstacles had lower compliance compared to adolescent girls who experienced obstacles with good compliance, which amounted to 5 (17.86%) individuals. Meanwhile, 89 (67.94%) adolescent girls who do not encounter obstacles have low compliance. Moreover, 42 (32.0%) adolescent girls who do not experience obstacles have good compliance. Based on the data, adolescent girls who do not experience obstacles have higher compliance than those who do. The Chi-Square test analysis yielded a p-value of 0.135 > 0.05. Thus, it can be concluded that there is no significant relationship between obstacles and compliance among female adolescents at SMAN 5 Mataram.

The analysis of the relationship between obstacles and attitudes showed that 19 (67.86%) of the adolescent girls who experienced obstacles had a poor attitude. Meanwhile, the respondents who were found not to experience the barriers and had a good attitude numbered 77 (58.78%). The Chi-Square test analysis results showed a p-value of 0.001 < 0.005, indicating a significant relationship between obstacles and attitudes among female adolescents at SMAN 5 Mataram.

DISCUSSIONS

The analysis using the Chi-square statistical test showed a p-value of 0.052, which means there is no relationship between attitude and compliance. Adolescent girls' attitudes towards consuming iron supplements may be because most do not know the benefits of consuming iron supplements. This is evidenced by data from the questionnaire responses, which show that out of 159 female adolescent respondents, 155 do not know the benefits of consuming iron tablets.

Attitude is one factor that influences students' consumption of iron supplementation tablets. However, the statistical results in this study indicate that attitude does not affect the consumption of iron tablets. In line with these results, Noviazahra (2017) stated that attitude does not influence the consumption of iron supplement tablets [7].

Cognitive, affective, and conative components influence attitudes toward consuming iron supplements. These components can be positioned as the result of evaluating the object. The theory states that if one of the three components of attitude is inconsistent with the others, it will lead to a dissonance that triggers an attitude change mechanism [8].

The evaluative response is expressed through emotions, such as personal feelings toward the attitude object. The evaluative reaction in the form of behavior can be in the form of support or specific actions taken by someone towards the attitude object [9]. In this study, what is meant is the attitude towards consuming iron supplement tablets.

Teenagers with a good attitude will understand the importance of maintaining iron tablet intake to prevent anemia in teenage girls. Attitude is a reaction and response still latent from a person to an object, starting with an experience that will have a dynamic or directed impact on the individual's response to the object and related situations. A previous study explains

that mass media influence adolescents' attitudes in conveying information, whose main task is to deliver suggestive messages that provide firm enough information to find an adequate basis for evaluation [10]. With a good attitude, there will be obedience [11].

The analysis results using the Chi-square statistical test show a p-value of 0.135, which means there is no significant relationship between obstacles and compliance. It can be seen from Table 4.6 that respondents with low adherence have 89 (67.94%) female adolescents with barriers. This can be seen from the questionnaire results, which show that the lack of knowledge among adolescent girls regarding the benefits of TTD and the need to be reminded when consuming TTD can be a factor linking poor compliance and the presence of obstacles. Meanwhile, 42 (32.06%) adolescent girls observed good adherence without barriers.

Compliance depends on school involvement. At the school, the health teachers were directly involved in implementing the iron tablet consumption policy, and it was recorded that all the female students consumed the iron tablets. In schools that were not consuming iron tablets, most female students did not take the remaining iron tablets. Meanwhile, in schools that involve female students in administering iron tablets, most female students comply with consuming iron tablets [12].

Based on the research by Nuradhiani et al. (2017), parents and teachers are the reinforcing factors for consuming iron tablets. This study has no significant relationship between parental support and adherence to iron tablet consumption [13]. Unlike parental support, a relationship exists between teacher support and adherence to iron tablet consumption. This is due to the role of teachers in integrating the anemia control program into school education as knowledge, which can foster a positive attitude in students [14].

Two main factors influencing adherence to taking iron supplementation tablets are factors from healthcare providers (such as the perception of iron supplementation tablets for treatment and poor follow-up visits) and individual factors (such as low awareness of the benefits of iron supplementation tablets). Additionally, the side effects of iron supplementation tablets include feelings of nausea/vomiting [15,16].

The research results show a significant relationship between obstacles and attitudes. Based on the statistical test results, a p-value of 0.01 was obtained, indicating a relationship between barriers and attitudes among female adolescents at SMAN 5 Mataram. The Chi-square test results show that teenage girls who do not experience obstacles have a good attitude, 77 (58.09%). In the study by Amir & Djokosujono (2019), a relationship between perceived barriers and the intention to consume iron supplementation tablets among high school girls in Surabaya was found, with p = 0.02, indicating a significant relationship between perceived barriers to iron tablet intake and a firm intention to consume the tablets [17].

Yuniarti et al.'s (2013) research shows that 51.8% of subjects experienced nausea as a side effect, leading to non-compliance [16]. Other causes of non-compliance include constipation and stool discoloration to black. Another reason expressed by 48.2% of the subjects is that Fe tablets taste bad and smell fishy; additionally, patients also feel bored, forgetful, and lazy about taking Fe tablets. Another factor that can cause adolescent girls to be non-compliant in consuming Fe tablets is their knowledge about the benefits of consuming Fe tablets and the anemia they suffer from. Predispositional factors, including expertise, influence individual behavior. Consuming Fe tablets that cause side effects leads people to reject the tablets given.

Adherence to the intake of iron tablets is often hindered by the benefits of iron (Fe) supplementation. Compliance with iron supplementation tablets is one of the most critical factors in the success of the iron supplementation program, along with the delivery and distribution of the tablets. The number of teenage girls who do not follow the rules for taking iron supplements is caused by many factors, such as laziness and side effects often felt after taking the iron supplements [18].

Laziness is one of the inhibiting factors for adolescent girls in consuming iron tablets, so the researchers assume that supervision of iron tablet consumption is necessary. According to the Indonesian Ministry of Health regulations, 1999, medication supervision is carried out by designated and trusted individuals. Supervise and monitor patients to ensure they take their medication regularly and thoroughly. The duties of a medication supervisor include monitoring daily medication intake, recording the medicines taken and noting any complaints from patients, participating in medication administration, and providing motivation [19]. This is consistent with the results of the questionnaire in the study, which showed that female students at SMAN 5 Mataram do not consume iron supplements if not reminded.

CONCLUSION

Attitude and barriers to compliance are not related. It can be seen that adolescent girls who consume iron supplementation tablets do not know the benefits of

consuming the tablets themselves. In terms of compliance, it can also be seen that adolescent girls will only consume iron supplementation tablets if school teachers' guidance is available. Meanwhile, the obstacles are related to attitudes. Strengthened by the laziness to consume iron supplements and the fishy smell, as well as nausea when adolescent girls consume iron supplements.

REFERENCES

1. Permenkes RI. Tentang angka kecukupan gizi yang dianjurkan untuk masyarakat Indonesia. Jakarta: Kemenkes RI; 2019.
2. Fitriana, Pramardika DD. Evaluasi program tablet tambah darah pada remaja putri. Media Publikasi Promosi Kesehatan Indonesia (MPPKI). 2019;2(3): 200–207. https://doi.org/10.56338/mppki.v2i3.807
3. Nuraisya W. Efektifitas pemberian TTD melalui program gelang mia pada remaja terhadap tingkat anemia (Studi Analitik Pada Remaja Putri di SMP Seluruh Kecamatan Pare). Jurnal Ners dan Kebidanan (Journal of Ners and Midwifery). 2019;6(3):310–319.https://doi.org/10.26699/jnk.v6i3.ART.p310-319
4. Permatasari. Efektivitas program suplementasi zat besi pada remaja putri di Kota Bogor (Effectiveness of iron supplementation programme in adolescent girls at Bogor City). Media Kesehatan Masyarakat Indonesia. 2018;14(1):1–8.https://doi.org/10.30597/mkmi.v14i1.3705
5. Robert Ho. Handbook of univariate and multivariate data analysis and interpretation SPSS. Taylor & Francis Group. 2006. https://doi.org/10.1198/000313008X332287
6. Manurung HY, Aritonang EY, Jumirah. Hubungan kepatuhan konsumsi tablet tambah darah (TTD) dan pemeriksaan kehamilan dengan kadar hemogl [Thesis]. Sumatera Utara: Universitas Sumatera Utara; 2018.
7. Noviazahra D. Faktor-faktor yang mempengaruhi konsumsi tablet tambah darah dalam program sekolah peduli kasus anemia pada siswi SMA Negeri di Kabupaten Bantul tahun 2017 [Skripsi]. Yogyakarta: Poltekkes Kemenkes Yogyakarta; 2018.
8. Azwar S. Sikap manusia teori dan pengukurannya edisi ke 2. Yogyakarta: Pustaka Pelajar; 2011.
9. Sulistyorini E, Maesaroh S. Hubungan pengetahuan dan sikap remaja putri tentang anemia dengan perilaku mengkonsumsi tablet zat besi di RW 12 Genengan Mojosongo Jebres Surakarta. Jurnal Kebidanan Indonesia : Journal of Indonesia Midwifery. 2019;10(2):110. https://doi.org/10.36419/jkebin.v10i2.286
10. Irianti B. Hubungan volume darah pada saat menstruasi dengan kejadian anemia pada mahasiswa Akademi Kebidanan Internasional Pekanbaru Tahun 2014. Encyclopedia of Journal. 2019;1(2):257–261.
11. Hamranani SST, Permatasari D, Subiakni B. Hubungan pengetahuan dan sikap dengan kepatuhan minum tablet Fe pada remaja putri Kelas X di SMK N 1 Klaten. Triage Jurnal Ilmu Keperawatan. 2018;8(1):1–10.
12. Widiastuti A, Rusmini. Kepatuhan konsumsi tablet tambah darah pada remaja putri. Jurnal Sains Kebidanan. 2019;1(1):12–18.
13. Nuradhiani A, Briawan D, Dwiriani CM. Dukungan guru meningkatkan kepatuhan konsumsi tablet tambah darah pada remaja putri di Kota Bogor. Jurnal Gizi dan Pangan. 2017;12(3):153–160. https://doi.org/10.25182/jgp.2017.12.3.153-160
14. Listiana A. Analisis faktor-faktor yang berhubungan dengan kejadian anemia gizi besi pada remaja putri di SMKN 1 Terbanggi Besar Lampung Tengah. Jurnal Kesehatan. 2016;7(3):455–469.
15. Winichagoon P. Prevention and control of anemia: Thailand experiences. The Journal of Nutrition. 2002;132(4Suppl):862S-6.https://doi.org/10.1093/jn/132.4.862s
16. Yuniarti, Rusmilawaty, Tunggal T. Hubungan antara kepatuhan minum tablet Fe dengan kejadian anemia pada remaja putri di MA Darul Imad Kecamatan Tatah Makmur Kabupaten Banjar. Jurnal Publikasi Kesehatan Masyarakat Indonesia. 2013;2(1): 2011–2016.
17. Amir N, Djokosujono K. Faktor-faktor yang berhubungan dengan konsumsi tablet tambah darah (TTD) pada remaja putri di Indonesia: literatur review. Jurnal Kedokteran Dan Kesehatan. 2019;15(2):119.
18. Budiarni W, Subagio HW. Hubungan pengetahuan, sikap, dan motivasi dengan kepatuhan konsumsi tablet besi folat pada ibu hamil. Journal of Nutrition College. 2012;1(1):99–106.
19. Wahyuni S. Efektifitas pendampingan minum tablet tambah darah (TTD) oleh kader posyandu terhadap peningkatan kadar Hb ibu hamil di Puskesmas Kota Palangkaraya. Jurnal Surya Medika. 2013;3(2):82–94.