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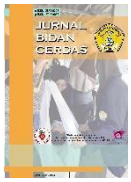

The Effect of Peer Assistance on Adherence to Consuming Iron Tablets and Anemia Status among Young Female Adolescents

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ABSTRACT

Introduction: Basic Health Research stated that 76.2% of young women received iron supplements in the last 12 months, and only 2.13% of them consumed iron tablets as recommended. Anemia in adolescence causes reduced physical and mental capacity and diminished concentration in work and educational performance. **Purpose:** This study aimed to assess the impact of peer mentoring and its effect on tackling anemia in adolescent girls. **Methods:** The method used was quasy experiment and was conducted for 12 weeks from July-November 2022. The case group consisted of teenagers at SMP 1 Mamuju and the control group was at SMPN 1 Malunda 1. **Results:** Before the intervention, the anemia status in the case group was 19.2%, and post-intervention was 9%. The control group before intervention was 20.5%, and after intervention, it was 2.6%. There was no difference in the Hb test results for the two sample groups (p-value 0.319). After the intervention, the two sample groups had a difference in Hb changes (*p-value* 0.000). **Conclusion:** Changes in Hb before and after the intervention showed differences in the case and control groups (p-value 0.000). Peer assistance is highly recommended as one of the anemia interventions among female adolescents.

INTRODUCTION

Stunting is still a health problem for under-five children in Indonesia. In addition, Indonesia is currently experiencing a triple burden of excess and deficiency of macronutrients and micronutrients simultaneously (Titaley et al., 2019). Therefore, handling and managing nutritional problems in Indonesia is increasingly complicated and complex. Prevention of stunting, not only among stunted children but must start from the upstream, namely in pregnant women, even before women get married and become pregnant because women who experience nutritional problems before pregnancy will find it very difficult to improve their nutritional status after pregnancy, especially in the early stages of pregnancy (Laksono et al., 2022).

Based on the Basic Health Research (Riskesdas) data from 2007, 2013, and 2018, there is a trend of increasing prevalence of anemia in adolescents. In 2018, 32% of adolescents in Indonesia were anemic. Approximately 7.5 million Indonesian adolescents are at risk of experiencing obstacles in growth and development, cognitive abilities, and susceptibility to infectious diseases (Kemenkes RI, 2008, 2010, 2013, 2018b). In addition, adolescents experienced food insecurity during the Covid-19 pandemic, which could impact their food intake and nutritional status. Most

adolescents experienced food insecurity during the Covid-19 pandemic, ranging from mild (30.6%), moderate (58.6) to severe food insecurity (1.8). Only 9% of youth experience good food security (Nurbaya & Najdah, 2023).

The Ministry of Health has issued Permenkes No. 51 of 2016 concerning Standards for Providing Nutritional Supplements for the prevention and management of nutritional problems (anemia) in young female adolescents, namely the provision of Iron Supplement Tablets (TTD – *Tablet Tambah Darah*) through schools (junior high and high school) (Peraturan Menteri Kesehatan Nomor 51 Tahun 2016 Tentang Standar Produk Suplementasi Gizi, 2016). However, the results obtained are still very far from expectations. In 2018, 76.2% of young female adolescents received iron supplements in the last 12 months. However, only 2.13% of them consumed iron tablets as recommended (as many as ≥52 tablets in one year) (Kemenkes RI, 2018a).

Previous research on the effectiveness of giving iron tablets through the Bracelet Mia program reported a significant difference in the increase in Hb for young female adolescents (SMP) after being given iron tablets for one year. TTD purchasing program can increase Hb (12-14) mg/dl in risk groups (Nuraisya et al., 2019).

One of the causes of anemia for young female adolescents is the natural process experienced by young female adolescents who have gone through puberty every month, especially if they are not obedient in consuming iron tablets according to the rules. Research conducted in 2020, from research on the adherence of young female adolescents to taking iron tablets showed that parents have an essential role in adherence to taking iron supplements for young female adolescents (Ningtyias et al., 2020). The study results showed that adolescents with strong behavioral control had a level of adherence to taking iron tablets 3.90 (Runiari & Hartati, 2020). Several factors, including parental knowledge and supervision, can influence the adherence of adolescents to taking iron tablets. The results showed that there were differences in the level of adherence to drinking iron supplements in adolescents supervised by parents who received socialization with adolescents under parental supervision without socialization, p-value 0.000 (Nurjanah & Azinar, 2023).

The coverage of youth targets in West Sulawesi is still low (25.47%), lower than the national average coverage. Based on districts, the lowest coverage was Polewali Mandar district with 2.81%, and Mamuju with 12.71% (Kemenkes, 2013; Kemenkes RI, 2018b). Previous research recommended increasing the coverage of blood supplements, however there a lack of information on the effectiveness of peer assistance among young female adolescents in taking iron tablets. This study aimed to assess the impact of peer mentoring (adolescent girls who have previously been given training on adherence to taking iron supplement tablets) and its effect on tackling anemia in adolescent girls.

METHODS

The method used in this research is Quasy Experiment – pre-test–post-test group design. The population in this study were all teenagers who study in SMP in West Sulawesi Province. The total sample was 78 teenagers. The sampling technique uses random sampling with inclusive criteria: SMP students, young women aged 12-15, and those already getting menstruated.

The case group was teenagers at SMP 1 Mamuju in Mamuju Regency and the control group at SMPN 1 Malunda 1, Majene Regency. The case group facilitators are young female adolescents at the same school who have previously been given training. Companions are selected based on criteria such as role models and other female idols. The number of companions is ten people, each companion

accompanying eight people. A health center nutrition officer accompanied the control group. Participants consumed iron tablets every week together at school, and monitoring was carried out on companions weekly in both the case and control groups. The research time was 12 weeks (3 months) in July-November 2022. The Hb measurement was conducted twice, namely before being given the TTD tablet and one week after the 12th week of administration of the TTD. The Hb measurement before intervention was conducted to determine the initial state and differences between the groups.

Data were analyzed through univariate analysis to determine the distribution of values for each variable studied—bivariate analysis to assess the effect of the intervention given to each sample group. Hypothesis analysis was used to assess the difference in adherence between the case and control groups using an independent T-test and to assess the effect of adherence to anemia status using a paired T-test. A sample of 78 for each group using the proportional sampling method and the respondent have experienced menstruation.

RESULTS

The sample in this study were early adolescents ranging in age from 12 to 14 years. Table 1. illustrated characteristic of respondents. A total of 50% of the case group was 12 years old while the highest number of the control group was at 13 years age group. Table 1 also showed the level of adherence to taking TTD samples was assessed based on the number of TTD taken for 12 weeks. A total of 70.0% of the case group consumed >=11 tablets for 12 weeks while at the control group only 38.5% consumed >=11 tablets.

Table 1. Characteristics of respondents

Variables	Case		Control	
	n (78)	%	n (78)	%
Age (Year)				
12	39	50.0	15	19.2
13	23	29.5	33	42.3
14	16	20.5	30	38.5
Iron Tablets Consumption				
>=11 Tablet	70	89.7	30	38.5
<= 10 Tablet	8	10.3	48	61.5

The Hb test was carried out pre and post-in both sample groups as shown. The case group, as described in Table 2 of the anemia sample case group, was 19.2%, and post-intervention anemia 9%. The control group before the anemia intervention was 20.5% and after intervention the anemia was 2.6%.

Table 2. Hb test results before and after intervention

HB	Case				Control			
	Pre		Post		Pre		Post	
	n	%	n	%	n	%	n	%
Normal	63	80,8	78	100,0	62	79.5	76	97.4
Anemia	15	19,2	0	0,0	16	20.5	2	2.6
Total	78	100	78	98.7	78	100	78	100

Table 3 illustrates that the percentage, the average number of iron tablets consumed, and the number of adherent samples in the case group were higher than

in the control group. Statistical tests for the two groups of cases showed that there were differences in the cases with a p-value of 0.000.

Table 3 The Effect of peer assistance on compliance with taking iron tablets in young female adolescents.

Iron Tablets Consumption	Sample				*p-value*
	Case		Control		
	Adhering	Not Adhering	Adhering	Not Adhering	
Number of Iron Tables	89,7%	10,3%	38,5%	61,5%	0,000*
Average		11,43	7.91		0.000*
Adhering	70	8	30	48	0.000*

**Independent t-test. Significant P-value <0.05*

Table 4. The effect of adherence to taking iron tablets on increased Hb in young female adolescents

Hb Status	Case		Control		*p-value*
	Normal	Anemia	Normal	Anemia	
Pre	80,8%	19,2%	79,5%	20,5%	0,319
Post	100%	0%	97,4%	2,6%	0,000*
Paired T-Test	0,000*		0,000*		

**) Paired t-test, significant p-value<0.05*

Table 4 shows the differences in Hb changes in the two sample groups. Before the intervention, there was no difference in the Hb examination results for the two sample groups (p-value 0.319). After the intervention, the two sample groups had a difference in Hb changes (p-value 0.000). Changes in Hb before and after the intervention showed differences in the case and control groups (p-value 0.000).

DISCUSSION

This study showed the level of adherence to taking TTD samples was assessed based on the number of TTD taken for 12 weeks. A total of 70.0% of the case group consumed >=11 tablets for 12 weeks while at the control group only 38.5% consumed >=11 tablets. Young adolescent girls still lack awareness of the importance of iron tablets which affects their compliance. A previous study found that perceptions of susceptibility, seriousness, benefits, barriers, and beliefs affected teen girls' adherence to iron tablets (Thifal et al., 2023). Other reasons young female adolescents refuse to consume blood-boosting tablets are due to the effects after consuming iron tablets such as nausea, vomiting, pain, and dizziness (Fernández-Gaxiola & De-Regil, 2019).

This study found that anemia in the two case groups was 19.2% before the intervention, and in the control group was 20.5%. After the intervention, anemia in the case group was 0%, and the control group was 2.6%. Testing the hypothesis with the paired-T test obtained a p-value 0.000 for both the case and control groups. It illustrates the effect of the intervention given (giving TTD) for 12 weeks on changes in anemia status. It is important that compliance with consuming iron supplementation (TTD) affects the incidence of iron deficiency anemia in adolescents (Feriyanti et al., 2022). Studies mentioned that the low adherence of adolescents to consuming iron tablets (one tablet per week) has an impact on increasing cases of iron deficiency anemia in young women (Feriyanti et al., 2022).

Hypothesis testing with an independent T-test to assess differences in changes in anemia status in the anemia status of the case group and the controls obtained a p-value of 0.000, illustrating that there was a difference in changes in anemia status between the case group and the control group, in which the change in anemia status in the case group was better than the case group because the case group's compliance with TTD was better than the control group. Some of the results of previous studies that have been reported regarding anemia in female adolescents include anemia in female adolescents at SMA Negeri 3 Kota Tangerang of 57.89% (Ayuningtyas et al., 2020). There is a relationship between nutritional status and the incidence of anemia. Research on differences in results at SMA Negeri 1 Pangkalan Kerinci found that 58.6% of adolescents experienced anemia and 47.4% were not anemic. There is a relationship between nutritional status and the incidence of anemia (Apriyanti, 2019).

Some studies reported a relationship exists between nutritional knowledge and adherence to the consumption of Fe tablets and no relationship between diet and anemia status in female adolescents. Training involving parents as companions and supervisors for taking iron supplements at home showed that the compliance rate for young women in taking iron supplements was 76.1%. There is a difference in the level of obedience of girls from parents who supervise their children and parents who do not supervise (p-value 0.000). The results of research on anemia and family support on adherence to drinking iron tablets in adolescents reported that the level of adherence of adolescents was 54.9%, hypothesis testing with chi-square obtained a p-value of 0.414, there was no relationship between family support and family adherence to consuming iron supplement tablets (Fitranti et al., 2022; Samputri & Herdiani, 2022). Moreover, peers and the social environment have a strong impact on adolescents on eating patterns (Rasmaniar et al., 2022).

Furthermore, this study showed that the adherence to iron supplements in the control group was 89.7%, and in the control group, 38.5%. Hypothesis testing with the Independent T-test obtained a p-value of 0.000. There was a difference in compliance between the group accompanied by peers and the group accompanied by a nutrition officer at the puskesmas (public health center). What was obtained from the results of this study and research that has been previously reported there are fundamental similarities; that is, accompanying young women in consuming iron tablets is very important because the assistance provided is the motivation for young women. Knowledge is essential but insufficient to change a person's behavior among young women to regularly consume iron tablets.

CONCLUSION

Before intervention, the anemia status in case group was 19.2% and post-intervention was 9%. While the control group before intervention was 20.5% and after intervention was 2.6%. The two sample groups had a difference in Hb changes (p-value 0.000). Changes in Hb before and after the intervention showed differences in the case and control groups (p-value 0.000). It is highly recommended that peer assistance as one of the interventions to encourage young adolescent girls to consume iron tablet supplements regularly to reduce anemia among female adolescents.

Peers is crucial to be involved in the anemia reduction intervention as one of the stakeholders that can improve nutritional status of adolescent girls and facilitate the provision of iron supplementation in their respective communities. Adolescent girls' use of iron supplements was found to be influenced by their peers. Adolescent girls who attend school or not can be greatly influenced by easy adopters when it comes to iron supplementation. This implies that peers can act as educators, motivators, and

supporters of better behavior regarding iron supplementation during adolescence.

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