



**USE OF THE HEALTH INFORMATION PACK PROGRAM (HIPP)
IN ADOLESCENT GIRLS WITH ANAEMIA**

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ABSTRACT

The Health Information Package Program (HIPP) is a structured and planned health education programme that has been shown to be effective in increasing knowledge, adherence to iron supplementation, food choices and Hb levels in people with anaemia. This study aims to determine the effect of HIPP implementation on adolescent girls with anaemia in SMAN 2 Ciamis. Method: This study is a quantitative study with Quasy experimental design one group pre-post design. The population of this study were all adolescents suffering from anaemia at SMA Negeri Ciamis as many as 98 people. The sampling technique used purposive sampling and obtained 30 respondents. This research was conducted for 2 months from December 2023 to January 2024. The research instruments used were questionnaires which has been tested for validity and reliability, mobile phones and observation sheets. Data analysis was done using univariate and bivariate techniques with paired t-test. The results showed that students' knowledge about anaemia had a p-value of $0.330 > 0.05$, students' ability to choose food had a p-value of $0.738 > 0.05$, students' compliance with taking TTD had a p-value of $0.000 < 0.05$, students' Hb values had a p-value of $0.009 < 0.05$. There is a significant effect of HIPP implementation on adherence to taking blood supplement tablets and Hb levels, but this study also shows no effect of HIPP implementation on knowledge and ability to choose foods.

Keywords: adherence; adolescent girls; anaemia; hb levels; HIPP

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INTRODUCTION

Adolescents are a population vulnerable to health risks because of the rapid physical development that occurs during adolescence, which requires adequate sources of nutrition (Kontele & Vassilakou, 2021). Nutritional needs are often ignored by adolescents, resulting in various health problems (Hafiza et al., 2021). One of the problems faced by adolescents is micronutrient nutritional problems, which cause a high incidence of anaemia in adolescents, including low intake of iron and other nutrients (Amareta & Ardianto, 2018; Kusnadi, 2021). Anaemia is common in the community, particularly among adolescents and pregnant women (Kundu et al., 2023; Rahayu, 2021). Globally, anaemia affects approximately 1.62 billion people (Gaston et al., 2021). According to the World Health Organization (WHO), the prevalence of anaemia among adolescent girls in the world is still quite high, ranging from 40-88%. Anaemia is a global health problem, particularly in developing countries (Kebede et al., 2021). The incidence of anaemia among adolescent girls in developing countries is about 53.7% (WHO, 2018). Indonesia is one of the developing countries with a high incidence of

anaemia. The incidence of anaemia in Indonesia among women of reproductive age (15-49 years) has increased from 21.6% in 2018 to 22.3% in 2019 (Kemenkes RI, 2020).

Anaemia status in adolescents is thought to be influenced by several factors, namely nutritional knowledge and compliance with taking blood supplement tablets (Sari et al., 2022). Another cause of anaemia in adolescents is due to irregular eating habits, abstinence from eating protein foods, not liking to consume vegetables and fast food habits (Muhayati & Ratnawati, 2019). In addition, the causes of anaemia in adolescents can be influenced by poor health status, nutritional status, parasitic infections and lack of knowledge about anaemia (Elisa et al., 2023; Julaecha, 2020).

The results of research conducted by Yulianti et al., (2024) also stated that there is a relationship between status, nutrition, menstrual cycle and knowledge with the incidence of anaemia in adolescent girls. In addition, research conducted by Safitri & Maharani, (2019) also shows that there is a relationship between nutrition knowledge and the incidence of anaemia in adolescent girls in SMP Negeri 13 Jambi City. Therefore, it can be said that adolescent girls who have poor nutritional knowledge will experience anaemia compared to those who have good nutritional knowledge. Anaemia in adolescents has a negative impact on reduced immunity, concentration, learning performance, adolescent fitness and productivity (Oktariana et al., 2021). The impact of anaemia in adolescent girls is particularly severe as they are future mothers who will become pregnant and give birth, increasing the risk of maternal mortality, preterm birth and low birth weight (Azizah et al., 2022; Azmi & Puspitasari, 2022).

Anaemia can be treated and prevented by eating foods that contain vitamins and minerals that support red blood cell formation, by fortifying foods with iron and by taking iron supplements, and by eating a variety of foods that are rich in iron, folate, vitamin B12 and vitamin C (Kumar et al., 2022). However, not all people are able to consume these foods, so additional iron intake is required, which is obtained from blood supplement tablets (Saleh & Bakoil, 2021). The government's efforts to overcome anaemia in adolescent girls are through the provision of blood supplement tablets in schools such as junior high schools and high schools or equivalent with the dosage of 1 tablet/week and 1 tablet/day during menstruation (Kemenkes RI, 2018). According to data from the Ministry of Health in 2017, the presentation of Fe (iron) tablets obtained by adolescent girls is still very low at 13.8%, which does not meet the national target of 30% (Isnaini et al., 2022). Given this problem, it is necessary to increase efforts to overcome anaemia in adolescent girls. Increased knowledge is expected to influence the behaviour of adolescent girls and overcome the incidence of anaemia in adolescent girls.

The Health Information Package Programme (HIPP) is a structured and planned health education programme developed by (Noronha et al., 2013) and later adopted by (Abujilban et al., 2018). The programme is effective in increasing awareness of anaemia, improving adherence to iron supplementation, increasing Hb levels and improving the ability to choose foods rich in iron, vitamin C and protein (Abujilban et al., 2018; Noronha et al., 2013). HIPP with follow-up educational health messages and reminders using WhatsApp is expected to improve knowledge about anaemia, increase awareness of better food choices, improve adherence to iron supplementatia (Elsharkawy et al., 2022). Given the high incidence of anaemia in adolescent girls, the authors are therefore interested in conducting research on "The Effect of HIPP Implementation on Adolescent Girls with Anaemia at SMAN 2 Ciamis". This study aims to analyse the effectiveness of providing HIPP interventions to increase

haemoglobin levels, increase knowledge, ability to choose the right food and adherence to Fe supplements.

METHOD

This study is a quantitative study with a one-group pre-post experimental design. The population of this study were all adolescents suffering from anaemia at SMA Negeri Ciamis as many as 98 people. The sampling technique used purposive sampling with and obtained as many as 30 respondents. This research was conducted for 2 months starting from December 2023 - January 2024. In the early stages of conducting the study, the researchers conducted pre-socialisation with headmasters, teachers, UKS supervisors and female students who had a history of anaemia to be used as research samples. The researchers also collaborated with a team from Puskesmas for Hb testing and UKS coaches for research implementation. After the respondents completed the informed consent form, the researcher conducted a pre-test, followed by the HIPP intervention sent via Whatsapp message for 2 months, and ended with a post-test. The instruments used in this study were questionnaires that had been tested for validated and reliable with Cronbach's alpha values 0.769 including respondent characteristics, anaemia knowledge, ability to choose food, compliance with Fe consumption, educational media and observation sheets for Hb test results, and mobile phones as a tool for sending messages via Whatsapp. Data were analysed using univariate and bivariate techniques. Univariate analysis was used to describe age, body mass index, knowledge, ability to select food, adherence to taking blood supplement tablets and elevated Hb levels. Bivariate analysis was used to determine the effect of the HIPP intervention on anaemia knowledge, adherence to iron supplementation, and elevated haemoglobin levels among anaemic schoolgirls using paired t-test.

RESULTS

Table 1.
Frequency distribution of age, body mass index, knowledge, food choice, adherence to blood tablets, Hb level (n=30)

Variables	f	%
Age		
15 years	15	50
16 years	15	50
Body Mass Index (Pre)		
Very Thin	5	16,7
Skinny	6	20
Normal	19	63,3
Body Mass Index (Post)		
Very Thin	1	3,3 %
Skinny	4	13,3 %
Normal	25	83,3 %
Knowledge (Pre)		
Both	23	76,7%
Enough	5	16,7%
Less	2	6,7
Knowledge (Post)		
Both	25	83,3%
Enough	3	10%
Less	2	6,7%
Food Selection (Pre)		
Both	28	93,3%
Enough	1	3,3%
Less	1	3,3%

Variables	f	%
Food Selection (Post)		
Both	29	96,7%
Enough	0	0
Less	1	3,3%
Adherence to Taking Blood Intake Tablets (Pre)		
Both	4	13,3%
Enough	1	3,3%
Less	25	83,3%
Adherence to Taking Blood Intake Tablets (Post)		
Both	8	26,7%
Enough	15	50,0%
Less	7	23,3%
Hb value (Pre)		
No Anemia	0	0
Mild Anemia	21	70%
Moderate Anemia	9	30%
Severe Anemia	0	0
Hb value (Post)		
No Anemia	17	56,7%
Mild Anemia	4	13,3%
Moderate Anemia	8	26,7%
Severe Anemia	1	3,3%

The results showed that there were 15 students (50%) aged 15 years and 15 students (50%) aged 16 years. The body mass index of the students before the HIPP intervention was mostly in the normal category, increasing from 19 people (63.3%) to 25 people (83.3%). Further analysis showed that students' knowledge increased to 83.3% after the HIPP intervention, food choice increased to 96.7%, compliance with taking blood supplement tablets, which previously most were categorised as poor, increased to 25 people (83.3%) and after the HIPP intervention most were categorised as adequate, 15 people (50%). The respondents' Hb values showed that before the HIPP intervention, most were classified as mildly anaemic, 21 people (70%), and after the HIPP intervention, most were classified as not anaemic, 17 people (56.7%).

The results of the paired t-test showed that the students' knowledge about anaemia had a p-value of $0.330 > 0.05$, the students' ability in food selection had a p-value of $0.738 > 0.05$, the students' compliance in taking blood supplement tablets had a p-value of $0.000 < 0.05$, the students' Hb values had a p-value of $0.009 < 0.05$.

Table 2

Paired t-test for knowledge, food choice, adherence to blood tablets, Hb level (n=30)

Intervention	Mean	SD	P-Value
Pre - Post Knowlwdge	82,17-84,67	8.375 ± 9.643	0,330**
Pre - Post Food Selection	86,67-87,40	8.915 ± 7.799	0,738**
Pre - Post Adherence to Taking Blood Intake Tablets	27,33-62,33	33.829 ± 27.053	0,000*
Pre - Post Hb Value	11,10-12,05	0.5246 ± 1.9208	0,009*

* significant effect, paired t-test

** no significant effect, paired t-test

DISCUSSION

This study evaluated the effectiveness of HIPP in improving knowledge, food choice, adherence to blood supplementation and HB levels in adolescent girls with anaemia. The results showed no difference in knowledge and food selection skills before and after the HIPP intervention, as evidenced by the respective p-values of 0.330 and 0.738 (p-value>0.05). This is because there was no significant increase in the level of knowledge and ability to make

food choices before and after the intervention, so the health information provided in the HIPP activities had no effect on increasing knowledge and ability to make food choices.

For the variables of respondents' adherence to taking blood supplement tablets and Hb testing, there was a significant increase such that the p-value was 0.000 and 0.009 respectively (p-value <0.05). This means that there is an effect of HIPP on adherence to taking blood supplement tablets and Hb levels before and after the intervention. This is in line with previous research showing that the HIPP intervention is effective in improving adherence to iron supplementation (Abujilban et al., 2018; Noronha et al., 2013). The results of this study are also consistent with research by Elsharkawy et al., (2022), which suggests that the HIPP programme with follow-up health education messages and reminders using the WhatsApp platform is an effective intervention for pregnant women with anaemia in Saudi Arabia.

The increase in compliance after the HIPP intervention was influenced by the weekly reminders sent via WhatsApp. This is consistent with research by Asrina et al., (2021) on adolescents' adherence to taking blood-fortified tablets before and after using the reminder application, which shows that adherence to taking blood-fortified tablets increased significantly after using the reminder application. Compliance increased in anaemic adolescent girls because adolescent girls already have better perception and memory for taking blood tablets. Adolescents with anaemia need iron supplementation and health education on dietary diversity to prevent a sudden drop in Hb and to overcome the effects of anaemia symptoms, which can interfere with activities (Habtegiorgis et al., 2022). Research by Gosdin et al., (2021) in Ghana suggests that regular use of iron supplements is effective in increasing Hb and reducing anaemia rates. Anaemia status in adolescents may be influenced by adherence to blood supplementation (Salhah et al., 2024). Taking blood supplement tablets can be one of the efforts to prevent and overcome anaemia in adolescents (Anjarwati & Ruqoiyah, 2020). The implementation of the blood supplementation programme is done by giving 1 tablet of blood supplementation every week. Adolescent girls can be said to be compliant in consuming blood supplement tablets if they consume 1 tablet every week or 4 tablets in 1 month (Putrianingsih et al., 2022; Kemenkes RI, 2018).

The implementation of HIPP was carried out for two months by providing health education to respondents, followed by sending a health education message and reminder every week via WhatsApp to ensure they take blood supplement tablets (Elsharkawy et al., 2022). The information provided to respondents included the definition of anaemia, risk factors, causes of anaemia, signs and symptoms of anaemia, the impact of anaemia, and information about blood supplement tablets, including the importance of taking blood supplement tablets regularly, ways to improve absorption of blood supplement tablets, side effects, foods high in iron, vitamin C and protein to increase iron absorption.

The implementation of this HIPP has produced results in line with the objectives, namely increased knowledge about anaemia, ability to choose nutritious foods, adherence to iron supplementation and increased haemoglobin levels. HIPP activities are structured and planned health education and regular follow-up education and reminders through WhatsApp media. The researcher concluded that this activity can increase respondents' motivation to adhere to taking blood supplement tablets as one of the efforts to overcome anaemia.

CONCLUSION

The results showed that there was a significant effect of HIPP implementation on adherence to taking blood supplement tablets (p-value 0.000) and Hb levels (p-value 0.009), but this

study also showed no effect of HIPP implementation on knowledge (p-value 0.330) and ability to make food choices in adolescent girls with anaemia (p-value 0.738). This study is expected to contribute to educational practices and health promotion efforts as a preventive and curative effort to overcome anaemia in adolescent girls, especially in educational settings. The researchers also hope that further research can be developed with a wider range of research subjects by adding the variable of anaemia in pregnant women to compare the effectiveness of HIPP through Whatsapp messages for adolescent anaemia and anaemia during pregnancy.

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