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RESEARCH ARTICLE

Knowledge and uses of iron supplements to treat anaemia among adolescent girls in Surabaya

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Abstract

Background: During adolescence, a phase of growth and development requires a lot of macros and micronutrient intake. The physical changes will certainly affect nutritional status, leading to nutritional problems, such as anaemia. **Objective**: To determine the level of knowledge of adolescent girls about iron supplements and how they use them to overcome anaemia. **Method:** A descriptive study with a cross-sectional design was used in this research, and an accidental sampling technique was used. **Result:** Most of the respondents need better knowledge, despite most of them having taken iron supplements from school, which is a part of the programs from the government. Many respondents have received information about iron supplements and anaemia, but numerous still do not comply with taking iron supplements. **Conclusion:** Education needs to be carried out to increase the compliance of adolescent girls in using iron supplements to improve the quality of the next generation.

Introduction

The Sustainable Development Goals (SDGs) are a worldwide development programme that is universal in nature. Improving nutrition is the second goal of the Sustainable Development Goals (SDGs) can be done through numerous actions, including breaking the chain of hunger, achieving food security, providing access to adequate nutrition and increasing sustainable agriculture (Situmeang & Putri, 2021). Goal 2 states that the target is to eliminate all forms of malnutrition in 2023 and achieve the internationally agreed target of reducing the total number of stunted children under five years old by 40% as well as meet the nutritional needs of adolescent girls, pregnant and lactating mothers, and seniors in 2025. The government targets the prevalence of stunting in Indonesia to fall to less than 14% by 2024. Maternal health must be very concerned with this phenomenon, especially during adolescence. For instance, Chronic Energy Deficiency (CHD) during pregnancy may occur due to a lack of energy and nutrient intake during adolescence, such as carbohydrates, protein, and fat, as well as micronutrients such as vitamin A, vitamin D, folic acid, iron, zinc, calcium, and others (Kemenkes RI, 2018). During adolescence, there is a phase of growth and development that requires a lot of macro and micronutrient intake. Nutritional problems commonly found in adolescents include anaemia, obesity and chronic energy deficiency (CHD) (Marmi, 2013). An insufficient dietary status in adolescents could depict a picture of malnutrition in their children, which might lead to stunting. There are many causes of stunting, including micronutrient deficiencies that might affect nutritional status, the most commonly found being iron (Fe) deficiency. The World Health Organization (WHO) argues that anaemia is one of the ten biggest health problems in this modern century, with a high potential in childbearing women or those who are of productive age, pregnant women, as well as adolescent girls. According to WHO, the prevalence of anaemia globally ranges from 40% to 80%. Furthermore, based on data

from the East Java Provincial Health Office in 2018, the occurrence of anaemia in East Java in adolescent girls was about 50% to 60% (Kemenkes RI, 2018). Micronutrient consumption is one of the main solutions to address this condition. One of the government's efforts to overcome anaemia is the provision of Iron Supplements.

Methods

Design

This research has been approved by the Research Ethics Commission of the Faculty of Pharmacy, Universitas Airlangga, with a letter of ethical eligibility No.20/LE/2023. This research is an observational study with a cross-sectional design, where all variables are observed simultaneously. Sampling was done using an accidental sampling technique, where the authors took available respondents in a place that matched the predetermined inclusion criteria. The respondents were adolescent girls who were at least 17 years old, were unmarried or had children, and were willing to become respondents. The sample in this study was adolescent girls in the North Surabaya area because stunting has the largest prevalence in Surabaya, which is 14.0%, especially in the Wonokusumo area.

Assessment

This study collected data by giving questionnaires to young women in high school. Then, the researcher processed the filled questionnaires. The primary data sources used were the questionnaire results. Data was processed descriptively, and results were presented in frequency and percentage tables. This research was conducted at high schools across North Surabaya with 206 respondents.

Results

Data collection for this study began on March 31 to April 8, 2023. The total respondents who met the inclusion criteria were 206 people, all questionnaires were filled in completely by the respondents so that the results could all be assessed.

Table I displays the respondents' demographics. Table II presents information on iron supplements, anaemia, and stunting. Table III outlines the uses of iron supplements. The incidence of anaemia is shown in Table IV.

Table I: Demographic

Demographic		n (%)
Age	17	141 (68.4)
	18	61 (29.6)
	19	2 (1)
	20	2 (1)
Family income	<1,000,000 IDR	53 (25.7)
	1,000,000 IDR – 1,999,999 IDR	63 (30.6)
	2,000,000 IDR – 3,000,000 IDR	43 (20.9)
	>3,000,000 IDR	44 (21.4)
	Others	3 (1.5)

Table II: Knowledge of iron supplement, anaemia, and stunting

Level of knowledge	n (%)
Good (76% - 100%)	16 (7.8)
Moderate (56% - 75%)	92 (44.7)
Poor (<56%)	98 (47.5)

Table III: Uses of iron supplements

Uses of iron supplements		n (%)
Taking iron supplements only during menstruation	Yes	24 (18.9)
	No	103 (81.1)
Amount of iron supplement consumed daily	One tablet	99 (77.9)
	Two tablets	4 (3.1)
	One tablespoon	1 (0.8)
	Two tablespoons	2 (1.6)
	Once a week	2 (1.6)
	Twice a week	1 (0.8)
	Once a month	2 (1.6)
	Rarely	10 (7.9)
	Other	6 (4.7)
How they take iron supplements	Before eating	31 (24.4)
	After eating	92 (72.4)
	When remembered	2 (1.6)
	Other	2 (1.6)
Consuming iron supplements with milk or tea	Yes	7 (5.5)
	No	120 (94.5)
Side effects of the supplement	Nausea	11 (8.7)
	Vomiting	6 (4.7)
	Passing black stools	2 (1.5)
	Constipation	1 (0.8)
	Headache	1 (0.8)
	Experience 2 or more side effects	9 (7.1)
	Never experienced any side effects	97 (76.4)

Table IV: Experience of getting anaemia

Experience of anaemia		n (%)
Symptoms of anaemia that have been experienced	Pale inner eyelids	1 (0.5)
	Pale nails	0 (0)
	Weakness	14 (6.8)
	Dizziness	34 (16.5)
	Shortness of breath	2 (0.1)
	Fast heartbeat	1 (0.5)
	Feeling weak during menstruation	6 (0.1)
	Experience 2 symptoms	58 (28.2)
	Experience 3 or more symptoms	81 (39.2)
	Never experienced any symptoms	9 (4.4)

Discussion

The results obtained in Table II regarding respondents' knowledge of iron supplements show that most respondents have poor knowledge. Moreover, concerning the negative effects of anaemia and how to overcome the side effects of iron supplements, few respondents answered correctly, which is less than 50%. From these results, it is also found that there are still many of the respondents who do not know that the impact of unhealthy pregnant women can cause the birth of stunted children, and this can be influenced by the lack of information about anaemia, stunting, and the benefits of taking iron supplements, especially during adolescence. Although most respondents said they had received education about anaemia and iron supplements, the information obtained is not the only factor that could increase respondents' knowledge. Moreover, the results show that most respondents have never experienced side effects when taking iron supplements. Thus, they do not know that iron supplements have side effects that may be felt after being consumed, and these side effects, especially nausea, can be avoided by taking iron supplements at night. Research by Khammarnia et al. (2016) declares that female students refuse to take iron supplements because of the side effects that will be caused, which are related to digestive problems such as diarrhoea, nausea, vomiting and pressure on the stomach. In addition, research conducted by Yuniarti et al. (2015) states that the factors that can cause a person to refuse to take blood supplements are side effects that can be caused when consuming them, such as nausea, constipation, and changes in stool colour to black. Several factors can affect knowledge, such as education, age and economic status; the higher the education taken, the broader the knowledge possessed, and the capacity to capture along with the mindset will develop with age so that knowledge will increase as the economic status determines the availability of necessary facilities to obtain knowledge (Notoatmodjo, 2011).

Table III shows that most respondents have taken or are taking iron supplements, but some respondents did not take iron supplements daily. These results do not follow the government recommendations for adolescent girls to take iron supplement tablets regularly to minimise the potential for anaemia, which could impact health and school performance. Additionally, this recommendation aims to prepare the health of adolescent girls who will later become mothers. This is supported by the Regulation of the Minister of Health of the Republic of Indonesia Number 51 of 2016 concerning Product Standards for Nutritional Supplementation. According to the results, the most common supplement respondents take is an iron supplement provided by the government programme. This indicates that they take advantage of the government programme by providing iron supplements for free. Some respondents have taken more than one type of iron supplement. However, it is important to pay attention to how they take the supplements and whether they are according to the rules of use. Although iron is needed by the body, if not properly recognised, excess iron can cause dangers such as organ damage, kidney damage, tissue damage, impaired nutrient absorption, and DNA damage. Therefore, it is important to maintain the balance of iron in the body and avoid iron overload or deficiency.

There are still respondents who do not take iron supplements. The reasons they do not take iron supplements even though they get them are various. The reasons are that they forget to take the supplements, do not like the taste or smell of them, and are afraid of the side effects. Moreover, they feel they do not need to take the supplements because they do not feel the symptoms of anaemia and identify their body as healthy. Besides, they do not know the function of taking iron supplements, especially during adolescence. People seek treatment or prevention when they get into a serious health problem. Iron supplements are needed because of the iron compositions that can not only prevent or overcome the incidence of iron deficiency anaemia but can also be used for vitamin C deficiency anaemia, vitamin B6 deficiency anaemia, macrocytic anaemia or vitamin B12 deficiency anaemia. Silvia et al. (2019) research argues that some nutritional content can facilitate iron absorption, such as vitamin C, iron, and protein intake. Another research conducted by Handriyanti et al. (2022) reveals that female students with sufficient vitamin C intake are less likely to experience anaemia

when compared to female students who have a vitamin C deficit. Therefore, micronutrients are essential to prevent and overcome anaemia, even though only in small amounts. By fulfilling iron needs since adolescence, it is hoped that it can reduce the occurrence of anaemia, which could lead to stunting.

Conclusion

Most respondents had poor knowledge about iron supplements and anaemia, which can affect their compliance. Moreover, most respondents took iron supplements provided by schools, which were part of government programmes. Therefore, advanced education about the benefits of iron supplements and the risks of anaemia is mandatory for the government to achieve the programme's goals.

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