The effectiveness of WhatsApp-based nutrition education towards compliance with iron-folic acid supplement intake among adolescent girls in Indonesia

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Abstract

Background: Iron deficiency anemia in adolescent girls in Indonesia is still high, reaching 22.7%. Anemia in adolescent girls impacts concentration in study, so that productivity of adolescents is decreasing. The government already runs a program of micronutrient supplementation program to tackle anemia in adolescent girls. However, this program was deemed ineffective because adherence to consumption of micronutrient supplement was still low. Aims: The aim of the study was to analyze the compliance of iron-folic acid supplement in girls with nutritional education through WhatsApp.

Settings and Design: This research was an experimental quasi study. The total sample was 60 SHS students divided into two groups, namely treatment group and control group. Methods and Material: Sampling used a random sampling method. Nutrition education was given through WhatsApp within 3 discussions in 1 month. Data collection was carried out twice, before and after education, and the data collected were knowledge and compliance with consumption of iron-folic acid supplement. Subjects were declared comply with the supplement consumption if they consumed 75% of the tablets given.

Results: The results showed that there was a significant difference in knowledge between the treatment group and the control group with a value of p = 0.002, and there was a significant difference (p<0.001) in the compliance in taking iron-folic acid between the treatment group and the control group. Conclusion: Nutrition education through WhatsApp can improve knowledge and influence adolescent girls to comply with the consumption of iron-folic acid supplement.

Keywords: Anemia, knowledge, compliance, micronutrient supplement, girl adolescent
Introduction

Adolescence is a prone condition in the process of development and growth, so that it can cause several health problems. A health problem that is often experienced by young women is anemia. The incidence of anemia in Indonesia is still quite high, and the prevalence of adolescent girls who experience anemia in Indonesia reaches 22.7%. According to WHO (2008), if the prevalence of anemia is in the range of 20-39.9%, it can be considered a moderate public health problem. The most common anemia in Indonesia is iron deficiency anemia. Young women are the most vulnerable age group to experience iron deficiency anemia because young women experience menstruation every month. Anemia in adolescent girls will cause the body to feel tired quickly and not concentrate while studying, so that it can have an impact on learning achievement and productivity of young women. Besides, anemia can also cause a decrease in body resistance, so that the body is more often exposed to infectious diseases. The impact of anemia is not only felt during adolescence, but also very dangerous for pregnant women. Suffering from anemia during pregnancy can cause maternal death, low birth weight (LBW), and prenat al death. Therefore, the government launched the Iron Nutritional Anemia Prevention and Control Program (PPAGB) for women of childbearing age which aims to reduce the prevalence of iron deficiency anemia. The program includes two activities, namely the provision of Counseling, Information and Education (KIE) about anemia and the provision of free blood supplement tablets. In practice, this program has not been running effectively because adherence to the level of adherence to blood supplement tablet consumption in adolescent girls is still low. Adherence to consuming blood supplement tablets is one of the indicators of success of the program. The low knowledge of adolescents about choosing food sources of iron and the lack of socialization of the iron supplement program for adolescents led to the need for nutrition counseling or nutrition education as an approach and prevention effort to control anemia in adolescents, accompanied by a government program, namely the provision of Blood Supplement Tablets (TTD). This study aims to analyze the compliance on folic acid supplement in girls with nutritional education through WhatsApp.

Subjects and Methods

The method used in this study is a quasi experimental pretest-posttest control group design. Quasi experimental is used because the subjects will be given treatment or intervention in the form of nutrition education through WhatsApp. This research was conducted in two schools, namely SMA Negeri 1 Srengat and SMA Negeri 1 Talun in Blitar Regency. The inclusion criteria in this study were young women who had menstruated, while the exclusion criteria were: 1) young women who had not menstruated, 2)
young women who attended other special nutrition interventions, 3) young women who had blood disorders such as thalassemia and hemosiderosis. The number of samples in this study was 60 girls, 30 girls at SMA Negeri 1 Srengat as the treatment group and 30 girls at SMA Negeri 1 Talun as the control group. Data were collected using a questionnaire with the Google form application. The data collected were data on sample characteristics such as age, nutritional status, and pocket money. Before and after nutrition education, the subjects will be given a questionnaire containing knowledge related to anemia and blood supplement tablets, as well as a blood supplement tablet compliance card. This research was conducted for 1 month, and in each week, nutrition education will be given about anemia and anemia booklets. The data that have been collected will be analyzed statistically using SPSS 17. The test used in this study is the Mann-Whitney and Wilcoxon Signed Ranks.

Results
Sample Characteristics

The results showed that, generally, the majority of subjects were 16 years old (56.7%) and 17 years old (70%) with an average monthly pocket money of Rp. 200,000-299,000. The majority of subjects had normal nutritional status (83.3%). The following is a table of the distribution of age, pocket money, and nutritional status of the subjects.

<table>
<thead>
<tr>
<th>Student Age Categories</th>
<th>Treatment Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>15 years old</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>16 years old</td>
<td>17</td>
<td>56.7</td>
</tr>
<tr>
<td>17 years old</td>
<td>9</td>
<td>30</td>
</tr>
<tr>
<td>18 years old</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

mean : 16.68 ± 676; p value : 0.012

There is a difference in the mean age of the subjects in the treatment group and the control group. Subjects are in the age range of 15-18 years. The age range of 15-18 years is included in the category of women of childbearing age. The mean age of subjects in the treatment group was 16 years, while the mean age of subjects in the control group was 17 years. In the treatment group, the lowest age is 15 years.
The majority of the pocket money for the treatment group and control group in one month is Rp. 200,000-299,000. In terms of the lowest pocket money, namely Rp. 100,000-199,000, the treatment group has less monthly pocket money than the control group. Meanwhile, if viewed from the highest pocket money >Rp. 600,000 the control group has a smaller amount than the treatment group.

Table 3 shows that the average nutritional status of BMI/U subjects was normal. Underweight nutritional status in each treatment group and the control group was also the same, namely 2 people, and overweight nutritional status in each group was the same, namely 3 people.

**Subjects’ Knowledge Before and After Nutrition Education**

Subjects’ knowledge about anemia in the treatment group before and after nutrition education showed a significant difference (p <0.05). Meanwhile, the knowledge in the control group before and after nutrition education did not show a significant difference (p> 0.05). Before the nutrition education was carried out, there was no significant difference in the knowledge value between the treatment group and the control group (p> 0.05). However, after the nutrition education was carried out, the knowledge value between the treatment group and the control group was significantly different (p <0.005)
Compliance with Blood Supplement Tablets After Nutrition Education

The results showed that compliance with the consumption of iron-folic acid supplement between the treatment group and the control group had a significant difference ($p < 0.05$) after 1 month of education.

Table 5 Comparison of the Difference in Compliance with the Consumption of Blood Supplement Tablets in SMA Negeri 1 Srengat and SMA Negeri 1 Talun in 2020

<table>
<thead>
<tr>
<th>Compliance</th>
<th>Treatment Group</th>
<th>Control Group</th>
<th>Delta</th>
<th>$P$ (Mann-Whitney)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean±SD</td>
<td>77.50±17.799</td>
<td>25.83±27.452</td>
<td>51.67</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Discussion

Differences in Knowledge Before and After Nutrition Education

Prior to nutrition education, there was no significant difference in knowledge between the control group and the treatment group ($p = 0.106$). This means that the knowledge of the treatment group and the control group before nutrition education is relatively the same. After the nutrition education was carried out, the average value of knowledge in the treatment group increased when compared to that of the control group. The results showed that there was a significant difference in knowledge between the treatment group and the control group with a value of $p = 0.002$ ($p < 0.05$). This means that after being given nutrition education through WhatsApp about anemia and blood supplement tablets, the subjects in the treatment group could understand the material well. The use of media such as booklets helps subjects to better understand the material. In line with research conducted by Zulaekah and Widajanti (2010) on school children in Sukoharjo, it shows that there are differences in knowledge about anemia in the three treatment groups ($p < 0.05$). Changes in the value of nutritional knowledge about anemia in the treatment group who received two weeks of nutrition education and once getting a booklet about anemia were greater than the treatment group who did not receive nutrition education. The final goal of providing nutrition education to adolescents is that adolescents can change attitudes and actions towards awareness to fulfill nutritional needs in order to live healthy.

Compliance with iron-folic acid supplement

Compliance in taking iron-folic acid supplement in this study was observed for 4 weeks, and the tablets that should be consumed were 4 tablets. This study showed that there was a significant difference ($p < 0.001$) in the compliance in taking iron-folic acid supplement between the treatment group and the control group. This means that after the nutrition education is carried out, the treatment group tends to be more obedient to consuming iron-folic acid supplement compared to the control group. There were several subjects who did not comply with taking the blood supplement tablets, on the grounds that after...
 consuming the blood supplement tablets, the subjects admitted to experiencing nausea, dizziness, and vomiting, so that they did not want to take the iron-folic acid supplement any longer. In addition, the subjects tend to forget, get bored, and get lazy if they have to routinely and continuously consume the iron-folic acid supplement. The fishy taste of the tablets was also the reason for the subjects not to regularly consume iron-folic acid supplement. Research conducted by Susanti et al (2016) states that the reasons for the subjects to not consume iron-folic acid supplement are being lazy, missing/damaged tablets, and forgetfulness; besides, after consuming the iron-folic acid supplement, the subjects felt nauseous, dizzy, and easily drowsy.

This research can increase the knowledge of adolescent girls about anemia and iron-folic acid supplement. In addition, it can increase the awareness of adolescent girls to obey to consume the iron-folic acid supplement. The limitation of this research is that the nutrition education through WhatsApp groups or online is considered not optimal because the researchers and subjects cannot interact directly, and subjects who are less responsive and less active are an obstacle in this study because the nutrition education is not carried out face-to-face.

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References