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Article

Anemia Prevention Program for Adolescent Girls in Indonesia During the Covid-19 Pandemic

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A B S T R A C T

Background: Anemia in adolescents is one of the world's health problems to date, even during the Covid-19 pandemic. Adjustments to the anemia prevention program for adolescents must be carried out considering that the Covid-19 pandemic is still ongoing. Objective: To investigate the anemia prevention program for adolescents during the Covid-19 pandemic. Methods: This study is a Scoping Review consisting of 5 stages including identification of questions with the PEOS framework (Population, Exposure, Outcomes, Study design), identification of relevant articles, search of relevant articles through topic-related information, databases of PubMed, Scopus, ScienceDirect, and Grey Literature (Google Scholar), literature searching strategy, and the last stage of article selection. Results: From a total of 268 articles identified based on themes, there were 5 relevant studies related to the topic including the anemia prevention program, namely the program of iron tablet supplementation in schools, the organization of anemia webinars, online socialization of anemia, and the use of the DR'E-Dumind education model as an anemia prevention education model as well as anemia prevention obstacles which got several anemia prevention programs carried out by optimizing the use of online media. Conclusion: The anemia prevention program during the pandemic was carried out by optimizing the use of online educational media.

I. INTRODUCTION

WHO (World Health Organization) data says that in 2016 the rate of anemia in women was 32.5% (WHO, 2016), while in Indonesia, the anemia rate for adolescent girls according to Riskesdas 2013 was 37.1%. The increase of anemia rate for adolescent girls to 48.9% according to Riskesdas data in 2018 occurred in the group of people aged 15-24 years and 25-34 years (Riskesdas, 2018). One of the government's programs in overcoming and preventing anemia in adolescents through a nutrition program is the program of iron tablet supplementation. According to Riskesdas 2018, the number of adolescents who received the iron tablets was 76.2% and those who did not receive the iron tablets was 23.8%. Of 76.2% who received the iron tablets, 89.9% received them at school and 19.1% did not receive them at school (Riskesdas, 2018). Increased focus on anemia prevention interventions is needed to accelerate the progress towards meeting Global Nutrition Target 2, a 50% reduction of anemia in women of childbearing age by 2025 (Gardner & Kassebaum, 2020). The incidence of anemia in adolescent girls, which is still a problem, is caused by the intake of irregular dietary habits, wrong dietary habits, and unbalanced dietary habits between adequacy and nutrition needed, even though at this time adolescents surely need a lot of nutrients including high iron because it is a transition period from childhood to adulthood (Ministry of Health RI, 2018).

One of the anemia management programs from the Ministry of Health in dealing with anemia in adolescent girls is the program of iron tablet supplementation. This program has the aim of improving the nutritional status of adolescent girls in order to break the stunting chain, prevent anemia in adolescents, and increase iron. During this pandemic, the Ministry of Health issued anemia management guidelines through primary nutrition service activities, one of which is iron supplementation for adolescent girls. During this pandemic, a number of government policies were issued to reduce the spread of Covid-19, one of which was the Large-Scale Social Restriction Policy (PSBB) which had quite an impact on community activities and economic conditions which were feared to affect the decline in people's purchasing power in fulfilling nutritious food. The Ministry of Education and Culture issued Circular Letter No. 4 of 2020 concerning the Implementation of Education Policies in the Emergency Period for the Spread of Coronavirus Disease (Covid-19) which arranged the learning process in schools to be replaced by learning at home via online during the Covid-19 emergency period. Conditions during this pandemic period certainly affect health activities in schools, one of which is the iron tablet supplementation that has been run by the schools (Ministry of Health, 2020).

During the Covid-19 pandemic, prevention of anemia in adolescents must continue to be carried out considering the increasing number of anemia. The limited implementation of anemia management in adolescents, especially during the Covid-19 pandemic, of course, is one of the problems in implementing the anemia prevention program. Information technology must be used properly so that the program can run even in the current pandemic situation (Indriani & Listyandini, 2020).

The lack of research on anemia prevention programs during the Covid-19 pandemic has resulted in program activities not being highlighted during this pandemic. With the availability of limited resources, the authors attempt to review the anemia prevention program for adolescent girls during the Covid-19 pandemic with the aim of obtaining evidence-based reports from the anemia prevention program for adolescents during the Covid-19 pandemic.

II. METHODS

This research method is a Scoping Review consisting of several stages, namely identifying research questions, identifying relevant studies, selecting studies, processing charting data, then compiling, summarizing, and reporting the results (Levac et al., 2010). The identification of

research questions was carried out using the Population, Exposure, Outcome, and Study Design (PEOS) format as follows.

Table 1. Framework of Research Question

P	E	O	S
1. Adolescent girls with anemia 2. Nutrition 3. Stakeholders 4. Midwife	1. Anemia prevention and management program for adolescents 2. Utilization of information technology during the pandemic to prevent anemia in adolescents	1. Program results 2. Program obstacles	All original and full-text studies related to anemia prevention programs for adolescents

After the researchers identified the scoping review questions, the next stage in the scoping review process was to identify relevant articles by setting inclusion criteria, namely articles published since 2020, in full text Indonesian or English, and the exclusion criteria such as articles published in the form of opinion articles and the form of paid articles. The databases used by the researchers were Scopus, ScienceDirect, PubMed, Grey Literature using Google Scholar as a Search Engine, and were from specific websites such as the Ministry of Health, WHO, and UNICEF, which was then continued with article selection described in a PRISMA flowchart below:

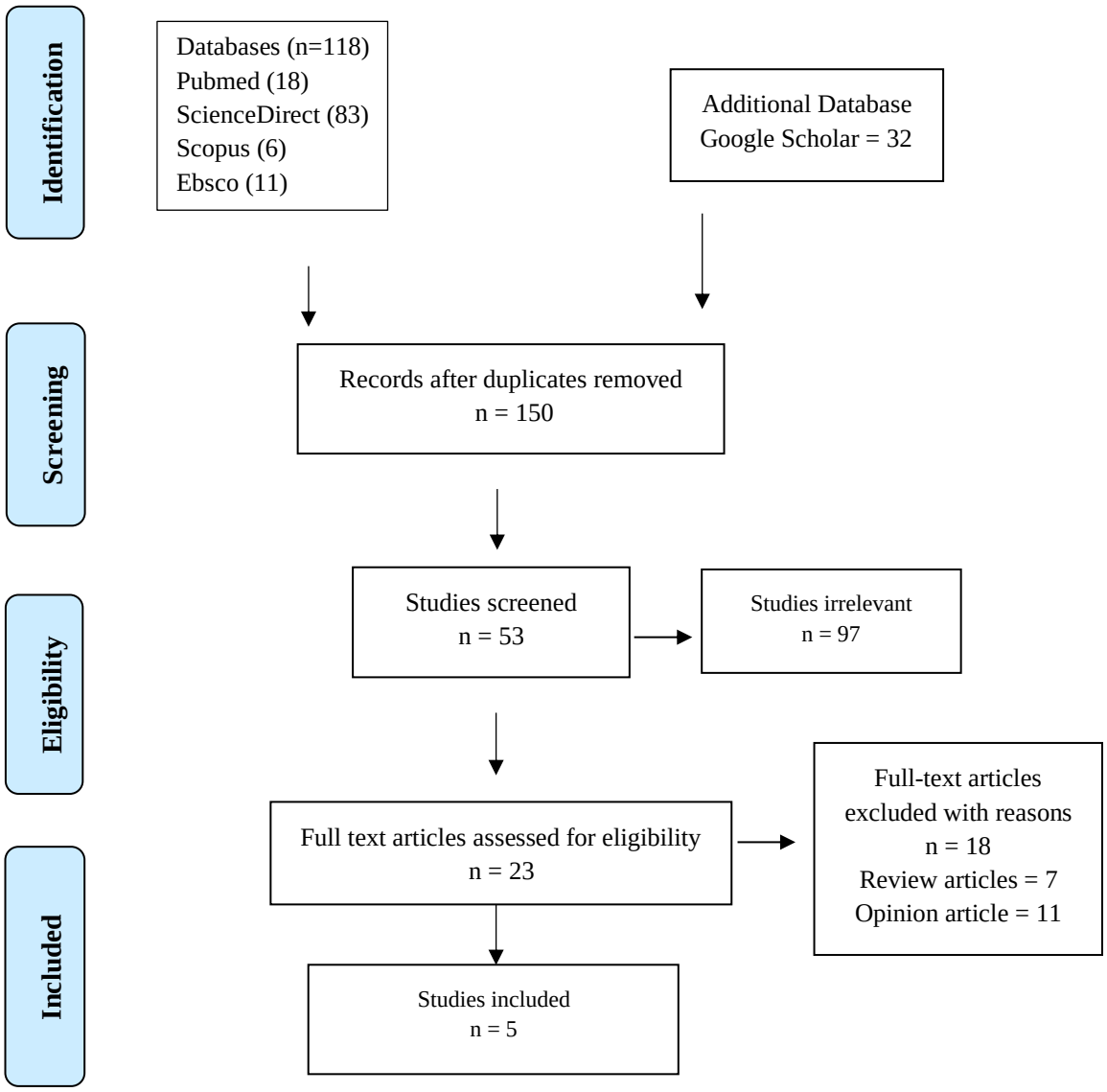

Figure 1. PRISMA flowchart (McInnes et al., 2018)

From the finding of the relevant articles, data charting and critical appraisal were carried out to determine the quality of the selected articles using the Mixed Method Appraisal Tool (MMAT) to explore the risk of study-level bias, then categorization of article quality was carried out with grade scales of Good, Fair, Poor, Very Poor (Hays et al., 2015), and mapping was compiled to construct the discussion.

III. RESULTS

The characteristic of the year of publication based on 5 journals that have been critically appraised was 2020 for all journals. This was in accordance with the inclusion criteria and adjusted to the state of the Covid-19 pandemic only in 2020. The characteristics of the most research methods were pretest and posttest, namely as much as 40% or 2 journals and as much as 40% for the qualitative method, and the quality characteristic of all articles was grade A (A1, A2, A3, A4, A5) with the (A1) articles as the highest grade.

Article Results

No.	Article	Program	Quote	Theme	Sub-theme
1	(Soewondo et al., 2020)	Iron tablet supplementation	"We organized webinars for students and also through YouTube. We invited anemia experts, uploaded learning videos, and so on. For example, when we hosted a webinar, there were 6000 participants. Two days later, there were already 19 thousand viewers on YouTube, meaning the information was well communicated" (Depkes). Ideally, there should be field monitoring. In the guidelines, iron tablets for adolescents can be obtained from teachers, cadres, or be bought by themselves. We have to monitor how this policy was implemented during the Covid-19 pandemic.	Anemia prevention program during the Covid-19 pandemic	a. Information technology-based anemia prevention education b. Iron tablet supplementation
2	(Indriani & Listyandini, 2020)	Online education	"…the topics discussed in this program were: Clean and healthy living behavior (PHBS) and 3M (washing hands, keeping distance, and wearing masks). Adolescents Nutrition in this material was explained about how to prevent anemia from occurring in adolescents…"	Anemia prevention program during the Covid-19 pandemic	Information technology-based anemia prevention education

No.	Article	Program	Quote	Theme	Sub-theme
3	(Puspitasari et al., 2020)	Anemia prevention education through webinars	"…The main objective of this activity was to socialize the negative impact of anemia on adolescent girls so that preventive measures can be taken for the realization of a healthy society without anemia…"	Anemia prevention program during the Covid-19 pandemic	Information technology-based anemia prevention education
4	(Asrori & Salam, 2020)	The effect of nutrition education with logbooks on knowledge and intake of anemic adolescent girls	"…The low achievement of the iron supplementation program and iron intake was due to a lack of knowledge of adolescent girls about the benefits of iron tablets and iron-rich foods. Thus, it is necessary to carry out nutrition education with the aim of increasing knowledge, attitudes, and positive norms in the field of nutrition as well as forming healthy consumption behavior and avoiding consumption deviations, so that eventually optimal health status could be achieved…"	Anemia prevention program during the Covid-19 pandemic	a. Information technology-based anemia prevention education b. Iron tablet supplementation
5	(Rohmatika et al., 2020)	Education and reminder software for strengthening anemia prevention program in adolescent	"…The "DR'E-Dumind" education model is a model that provides educational interventions about anemia in adolescents, including understanding, symptoms, causes, effects on anemia, and its prevention. Besides, education about iron supplementation includes understanding, composition, how to consume, side effects, and storage. The DR'E-DUMIND education model also provides an alarm to remind adolescent girls to take iron supplementation on a schedule that has been determined by the user. In information manipulation theory, Mc Comack stated that if someone receives information with a certain method repeatedly,	Anemia prevention program during the Covid-19 pandemic	Information technology-based anemia prevention education

No.	Article	Program	Quote	Theme	Sub-theme
			the message conveyed will be well-received.		

IV. DISCUSSION

IV.1 Iron Tablet Supplementation Program during the Covid-19 pandemic

One of the government's programs in overcoming and preventing anemia in adolescents through a nutrition program is the iron tablet supplementation program. However, during the Covid-19 pandemic, this program was stopped by school stakeholders and replaced by providing education about anemia through posters, webinars, videos, and applications during the Covid-19 pandemic to enable adolescents to prevent anemia independently (Soewondo et al., 2020). According to Mariani (2020), education is a very important intervention to improve the compliance of adolescent girls in consuming iron tablets, especially during the Covid-19 pandemic. At this time, the condition of adolescents with anemia will have the potential to experience a decrease in body resistance which then increases the risk of infection in the body, including Coronavirus infection. Therefore, adolescents need to continue to increase their immune systems by regularly consuming iron tablets to prevent anemia from occurring (Mariani, 2020). In the course of the iron tablet supplementation program during the Covid-19 pandemic, it is highly necessary to adjust the program to the current situation. The iron tablet supplementation program for adolescents could be carried out while still adhering to the principles and protocols for preventing infection and physical distancing, and the provision and management of iron tablet supplementation should be carried out regularly and must refer to the guidelines of iron tablet supplementation for adolescent girls and women of childbearing age (Ministry of Health, 2016).

Ensuring the availability of iron tablets during the Covid-19 pandemic requires an accurate strategy for the areas that implement PSBB, where local transmission appears, and where there are limited health services and school closures to maintain the availability of iron tablets in accordance with the target number of adolescent girls. Cooperation between the Health Office, Education Office, and the Ministry of Religion also help coordinate communication lines from the district level to the village and school levels. In addition, it is highly necessary to formulate detailed guidelines for the continuation of the iron tablet supplementation program according to local government policies regarding the status of regional zoning, to communicate on an ongoing basis about the importance of taking iron tablets for adolescent girls to prevent anemia, including how to prevent and overcome the side effects that will arise after consuming the iron tablets, and to evaluate and monitor the implementation of a comprehensive and continuous iron tablet supplementation program by health workers (Ministry of Health RI, 2018).

In addition to providing the iron tablets, there are several anemia prevention programs carried out during the Covid-19 pandemic in the world, one of which is PBM (Patient Blood Management) (Shander et al., 2020). Management of PBM Implementation is highly recommended as one of the programs aimed at managing patient blood. In the PBM toolbox, there are tools in the general principles section which discuss the identification and prevention of anemia and iron consumption to prevent anemia. Management Consensus of PBM Implementation, according to experts, greatly improves clinical outcomes, improves patient safety, and reduces hospital costs with the organized PBM program (Shander et al., 2020).

IV.2 Information technology-based anemia prevention education for adolescents during the Covid-19 pandemic

In providing information technology-based anemia prevention education to adolescents during the Covid-19 pandemic, a media that can help provide education in the form of materials about anemia that can be understood by adolescent girls as the target of the program is needed. A number of studies have proven that education about nutrition through printed books can increase the good consumption behavior and dietary habit of adolescents, as in the article entitled The effect of nutrition education with logbooks on the knowledge and intake of anemic adolescent girls (Asrori & Salam, 2020). The use of this anti-anemia logbook media affects the knowledge and amount of nutritional intake of adolescents with the researchers' consideration that there were no media used for monitoring the nutritional intake of adolescent girls supported by previous research which have also succeeded in increasing the knowledge and amount of nutritional intake through the printed book media. Meanwhile, in the second article entitled PHBS Via Online on adolescents during the Covid-19 pandemic (Indriani & Listyandini, 2020), information technology-based anemia prevention education for adolescents during the Covid-19 pandemic was carried out online, considering the government's policy for social distancing and at-home school activities. This definitely hindered education which should be better done face-to-face. In addition, according to research, the Covid-19 pandemic has had an impact on the health of adolescents in India which has completely changed the order, preparedness, and management of Health concentrated on Covid-19. This resulted in the disruption of the policy program of the Ministry of Health and Family Welfare, namely weekly iron and folic acid supplementation to prevent anemia in adolescents. Moreover, the supply of iron tablets, nutrition, and immunization activities were hampered (M et al., 2020).

Barriers to the implementation of the anemia management program accompanied by the need for self-isolation according to government policies surely have an impact on obesity. In the results of a study, it was found that obese children were more at risk of anemia due to low nutritional quality and low availability of iron in food, so it is highly necessary to screen for the immune-nutrient level to assess supplementation needs, provide information to families to keep their families healthy (Nogueira-de-almeida et al., 2020).

One of the information technology-based anemia preventions for adolescents during the Covid-19 pandemic is the "DR'E-Dumind" education model. DR is an acronym for developer, E-Du is education and information, and MIND is a reminder to remind consumption of iron supplementation. It is a model that provides educational interventions about anemia in adolescents, including understanding, symptoms, causes, effects on anemia, and prevention. In addition, education about iron supplementation includes understanding, composition, how to consume, side effects, and storage. The DR'E-DUMIND education model also provides an alarm to remind adolescent girls to take iron supplementation on a schedule that has been determined by the user. The alarm will automatically beep and display a notification of iron supplementation consumption on the screen so that users do not miss taking iron supplementation if the smartphone is in silent mode. In information manipulation theory, Mc Comack stated that if someone receives information with a certain method repeatedly, the message conveyed will be well-received (Rohmatika et al., 2020).

IV.3 Limitations of Scoping Review

In the preparation of this scoping review, there are several limitations, including the small number of articles used, the lack of articles that specifically discuss the anemia prevention program for adolescents during the Covid-19 pandemic, fewer articles are discussing the anemia program for adolescents than discussing the anemia program for pregnant women, especially during the Covid-19 pandemic, and the anemia prevention program is still running, considering that the Covid-19 pandemic has not yet ended, so the articles about evaluating the progress of the anemia prevention program tend to be few.

V. CONCLUSION

Anemia prevention program for adolescents during the Covid-19 pandemic includes the iron tablet supplementation which is still being run by the government through information technology-based socialization so that adolescents can consume the iron tablets independently at home. Information technology-based anemia prevention education is conducted through online webinars on nutrition, anemia prevention, and the DR'E-Dumind education model.

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