

Effectiveness Of Integrated Nutrition Intervention In Reducing Anaemia Among Adolescent Girls In Senior High School

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ARTICLE HISTORY

Received[22 November 2023]

Revised[26 December 2023]

Accepted[30 December 2023]

Keywords :

Adolescent, Anemia, Nutrition Education.

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ABSTRACT

Anemia is still a health problem throughout the world, including Indonesia. Anemia in adolescents has a serious impact and is entirely a consequence of iron deficiency which is closely related to the severity of anemia. In addition, anemia in adolescent girls can increase the risk of developing anemia during pregnancy. This will have a negative impact on growth and the fetus in the womb, along with the development to experience a number of complications during pregnancy and during delivery. Anemia can be treated with various strategies, one of which is through nutrition education. This literature review study aims to provide an overview of various methods, media, roles and effectiveness of nutrition education in the context of preventing anemia in adolescents in Indonesia. The method used in this paper is a literature review study by searching Indonesian language articles through the Google Scholar database and Garuda Portal in the period 2018-2021. The keywords used are "nutrition education", "anemia", "teenagers". From the results of the search and study, 8 articles were obtained through Google Scholar and 2 articles through the Garuda Portal which were used for this research. The results showed that nutrition education played a role in preventing anemia in adolescent girls through several aspects, namely knowledge, attitudes and hemoglobin levels. Nutrition education can be done through a variety of media such as healthy millennial card, booklets, leaflets, posters, comics, flipcharts, motion videos, Whatsapp and Facebook delivered through a number of educational methods such as games, counseling, lectures, Team Game Tournament (TGT), peer group education and integrated education

INTRODUCTION

Anemia is a condition in which the number and size of red blood cells or hemoglobin levels are below the established threshold. Anemia is one indicator of poor nutritional and health status (WHO, 2014). Anemia is still a health problem worldwide. Anemia is a health problem that affects various countries, both low-, middle- and high-income countries, and has a negative impact on health, social and economic (1). In 2011, 29% of women aged 15-49% who were not pregnant and more than 50% of women aged 12-15 years worldwide had anemia (WHO, 2015). Basic Health Research (Riskesdas) in 2013 showed that the prevalence of anemia in children aged 1-4 years, children aged 5-14 years and children aged 15-24 years were 28.1%, 26.4% and 18.4%, respectively. Of the 18.4% of adolescents aged 15-24 years who experienced anemia, the proportion was higher in female adolescents than male adolescents (Ministry of Health of the Republic of Indonesia, 2013). This figure has increased when compared to the results of the Riskesdas survey in 2007, where the prevalence of anemia in children aged 1-4 years, children aged 5-14 years and children aged 15-24 years were 27.7%, 9.4% and 6.9%, respectively (Ministry of Health of the Republic of Indonesia, 2007). In 2018, the anemia rate increased to 27.2% in women and 20.3% in men (Ministry of Health of the Republic of Indonesia, 2018). Anemia in adolescents has serious impacts and is almost entirely a consequence of iron deficiency which is closely related to the severity of anemia. Anemia can cause a decrease in the body's resistance to infection, impaired physical growth and mental development, and reduce physical fitness, work capacity and learning performance.

The most visible impact of anemia in adolescents is a decrease in learning achievement during school (Tesyafe et al., 2015). In addition, anemia in adolescent girls can put them at risk of experiencing anemia during pregnancy. This will have a negative impact on the growth and development of the fetus in the womb, along with the potential to experience a number of complications during pregnancy and childbirth (Utama, Rahmiwati, Arinda, 2020). Several studies have stated that the causes of anemia in adolescents include poor diet such as low intake of iron, folic acid, and vitamin C and physiological conditions of menstruation experienced during adolescence (Thomas et al., 2015). The most common cause of anemia is iron deficiency which is caused by lack of iron intake, inadequate iron absorption and increased iron needs, as well as increased iron loss such as during menstruation (Utama, Rahmiwati, Arinda, 2020). Various efforts can be made to prevent and overcome anemia in adolescents. The World Health Organization (WHO) proposes iron supplementation and folic acid supplementation as one of the strategies to prevent anemia in adolescents. In Indonesia, anemia management in adolescent girls focuses on iron supplementation. In addition, other approaches that can be taken are managing the food system in the community,

optimizing food patterns, food fortification, providing probiotics and nutrition education (Prieto-Patron et al., 2020; Osei et al., 2017; Vonderheid et al., 2019).

One strategy for preventing anemia in adolescents aims to inform adolescents about their specific energy and nutritional needs, including iron, and the benefits of adopting a healthier lifestyle and diet (Roche et al., 2018). The purpose of this literature review study is to analyze various nutritional educations that have been carried out to prevent anemia in adolescents in Indonesia. With this study, it is hoped that it can provide an overview of the methods, media, roles and effectiveness of nutritional education in order to prevent anemia in adolescents in Indonesia. Thus, it can provide a choice of nutritional education that can be applied and developed to help prevent and reduce the rate of anemia in adolescents in Indonesia.

RESEARCH METHODS

The method used in this study is a literature review. The articles used are research articles conducted in Indonesia on nutrition education for adolescents in preventing anemia. The inclusion criteria for searching for articles are: 1) Research articles published from 2018 to 2021, 2) Research articles in Indonesian, 3) Research articles can be downloaded in full text and for free. Article analysis was carried out using the PRISMA method (Preferred Reporting Items for Systematic Review & Meta Analysis). This method consists of four stages: Identification, Screening, Eligibility and Included. The databases used to search for articles are Google Scholar and the Garuda Portal. The search was carried out using the keywords "nutrition education", "anemia", "adolescents". In the first stage, namely Identification, the search was carried out using keywords through both databases and 1800 articles were obtained through Google Scholar and 7 articles through the Garuda Portal. All of the articles are research articles published in the last three years.

The second stage is Screening. Based on the title, all articles that have been screened in the first stage are then eliminated. Then, 42 articles were obtained through Google Scholar and 6 articles through the Garuda Portal that had titles relevant to this literature review article. The elimination process was carried out again based on the abstract and 28 articles were obtained through Google Scholar and 4 articles through the Garuda Portal. The third stage is Eligibility. At this stage, the articles that have been screened in the second stage are re-selected by selecting articles that are only available in full text form. Based on the selection results, 15 articles were obtained through Google Scholar and 3 articles through the Garuda Portal that met the research eligibility, namely according to the keywords, title, abstract, and method.

RESULTS

According to research conducted by Styaningrum and Metty (2021), nutrition education with the Healthy Millennial Card (KMS) Games has an effect on the knowledge of adolescent girls about anemia ($p = 0.000$). The KMS Games are a method and media for intervention in nutrition education in the form of a game that involves active participation from all participants. The Healthy Millennial Card (KMS) contains 15 questions: definition of anemia, diagnosis of anemia, causes of anemia, symptoms of anemia, short-term impacts of anemia, long-term impacts of anemia, reasons why adolescent girls are susceptible to anemia, how to prevent anemia, foods that can prevent anemia, foods that trigger anemia, and how to consume iron tablets. The increase in knowledge between before and after nutrition education was due to the KMS games method being an interesting and fun educational method for adolescent female respondents so that it was able to trigger enthusiasm and increase the respondents' understanding of the material (Styaningrum and Metty, 2021). In addition to using cards, nutrition education using motion video media as conducted by Fitriani, et al (2019) also has an effect on the knowledge of adolescent girls regarding anemia ($p = 0.000$). Not only the knowledge aspect, nutrition education with motion video media conducted by Fitriani, et al (2019) also has an effect on the attitudes of adolescent girls regarding anemia ($p = 0.001$).

Behavioral changes start from changes in knowledge and attitudes. Changes in knowledge and attitudes can be achieved, one of which is with the right education and media. Nutrition education with motion video media has been proven to be able to increase the knowledge and attitudes of adolescent girls regarding anemia. This is because motion video is a visual-audio media with simple images and animations that help stimulate the senses of sight and hearing, so that information is easier to accept and understand by respondents (Fitriani et al., 2019). One of the educational media that is often used is leaflets. Research conducted by Waluyo, Hidayanty, Seweng (2018) showed that nutrition education for 1 month with a counseling method using leaflet media combined with Whatsapp social media was able to improve the knowledge of adolescent girls regarding anemia better (Waluyo, Hidayanty and Seweng, 2018). Nutrition education can not only be done face-to-face,

but also through social media. Like the research by Waluyo, Hidayanty and Seweng (2018) which used Whatsapp social media, Khotimah, Ginting and Jaladri (2019) also conducted research using other social media, namely Facebook. The results of the study showed that there was an increase in the knowledge of adolescent girls in Tebas Kuala Village, Pontianak about anemia after being given nutrition education through Facebook media ($p = 0.000$) Nutrition education using leaflets was also conducted by Hannanti, Ilmi and Syah (2021). Hannanti, Ilmi and Syah divided their research respondents into two groups, where 1 group was intervened with leaflet media and 1 group with comic media.

The results of the study showed that nutrition education with leaflet and comic media both had a significant effect in increasing the knowledge of adolescent girls regarding anemia ($p = 0.001$), where comic media was more effective than leaflets, although both had an effect. Leaflet media is a folded sheet containing information in the form of sentences and pictures with an attractive title and simple language. Comic media contains illustrated stories that make complicated information simpler so that it is easier to understand. It would be better if nutrition education is carried out by combining the two media, as done by Mc Nicol (2014), where the delivery of information by combining comics and leaflets has proven to be more potential to help respondents understand the implementation of the information provided. (Hannanti, Ilmi and Syah, 2021; Mc Nicol, 2014). In addition to leaflets, educational media that are commonly used are posters and booklets. Muwakhidah, Fatih and Promadani (2021) conducted a study to see the effectiveness of nutrition education using the three media (booklets, leaflets and posters) on knowledge about anemia in adolescent girls. Before and after the intervention, respondents were given questions with several question indicators to assess their level of knowledge. The question indicators are the definition of anemia, etiology of anemia, characteristics of anemia, impacts of anemia, prevention of anemia, sources of nutrients for anemia sufferers, and foods that help and inhibit iron absorption.

DISCUSSION

The group given educational intervention with booklet media had the highest number of correct question answers on all indicators. This illustrates that booklets are the most effective media in increasing knowledge about anemia in adolescent girls when compared to posters and leaflets, although posters and leaflets also increase respondents' knowledge. Booklets contain material in the form of words and pictures with colorful and varied visual displays. This creates an interesting impression for people who read it. Therefore, because it is a book, the information presented with booklet media can be more complete when compared to leaflets and posters (Muwakhidah, Fatih and Primadani, 2021). Various types of nutritional education methods can be used to improve respondents' knowledge, in addition to games and counseling methods. Research conducted by Sulistiani, Fitriyanti, and Dewi (2021) used a combination of lectures and Team Games Tournament (TGT) methods in educating anemia prevention in adolescent girls. The Team Games Tournament (TGT) method is a type of cooperative learning by placing respondents in study groups of 5 to 6 people. The results of the study show that education on anemia prevention in adolescents using a combination of lectures and Team Games Tournament (TGT) methods can improve the knowledge of adolescent girls. The advantages of the lecture method are the amount of information received by respondents and the opportunity to ask questions for respondents can be greater. Meanwhile, the TGT method is effective in increasing knowledge because it creates a more active, relaxed atmosphere and fosters cooperation between team members and communication skills (Sulistiani, Fitriyanti, and Dewi, 2021). In adolescence, environmental and peer factors greatly influence the formation of an adolescent's attitude. In order to be accepted by their playmates, an adolescent tends to behave the same as their playmates.

Therefore, nutrition education for adolescents through friends or peer groups is expected to form good knowledge and attitudes towards nutrition in these adolescents. This is in line with research conducted by Utari, Kostania and Suroso (2019) that providing peer education has an effect on the attitudes of female adolescents regarding the prevention of anemia at the Pandes Village adolescent health post, Klaten ($p = 0.001$). The results of another study conducted by Astuti and Suryani (2020) also showed that peer group education can increase knowledge and change the attitudes of adolescent girls to be positive about anemia in Trimurti Village, Bantul. Through peer education, adolescents feel more open and confident in conveying what they think because they are familiar with peer educators, so there is no distance and fear from each individual adolescent to interact, ask questions, discuss and express opinions. In addition, peer group education also creates

dynamic interactions between group members, supporting and respecting each other, thereby increasing the awareness and behavioral intentions of an adolescent according to how their group members behave (Utari, Kostania and Suroso, 2019; Astuti and Suryani, 2020). The target of anemia education is not only for adolescent girls, but also for various parties around them so that they can take part together in preventing anemia.

CONCLUSIONS AND RECOMMENDATIONS

Nutrition education has an important role in preventing anemia in adolescent girls through several ways, namely by increasing knowledge, changing attitudes to be more positive and improving hemoglobin levels. Nutrition education can be done through various media, both print media such as healthy millennial cards, booklets, leaflets, posters, comics, flipcharts, electronic media such as motion videos and social media such as Whatsapp and Facebook. Various nutritional education media can be delivered with a number of educational methods such as games, counseling, lectures, Team Game Tournaments (TGT). In addition, to optimize the role of nutritional education in preventing anemia in adolescent girls, nutritional education can also be carried out by friends or peer groups as well as integrated education by involving various parties around adolescent girls such as parents, teachers, dormitory supervisors, and kitchen managers to take part. Educators, health workers, government and all other parties can use, combine and develop various media and nutrition education methods to help prevent and reduce anemia rates in adolescent girls so that a healthier generation can be achieved in Indonesia.

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