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The Influence of Nutritional Anemia Education Media on the Knowledge Level of Adolescents in Anemia Prevention Literature Review

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ABSTRACT

Background: The increasing need for nutrients during adolescence due to growth and menstruation experienced by young women causes young women to be susceptible to anaemia. Anaemia is a condition where the haemoglobin level in the blood is less than the normal value. One of the factors causing anaemia is the lack of knowledge among teenagers about anaemia. Many types of media, both visual and audiovisual, can be used to convey education about anaemia.
Purpose: To determine the effectiveness of nutrition education media in increasing teenagers' knowledge of preventing anaemia**.**
Methods: This research uses a literature review design. A literature review study is a method used to collect data or sources related to a particular topic, which can be obtained from various sources such as research articles**.**
Results: From the reviewed articles, five showed an increase in teenagers' average knowledge score after being educated using visual media. There is 1 article that shows an increase in teenagers' average knowledge score after being educated using audiovisual media. Three articles showed an increase in teenagers' average knowledge score after being educated using visual and audiovisual media.
Conclusion: Visual and audiovisual media are effective when used together to help increase teenagers' nutrition knowledge and provide nutritional education about anaemia. When delivering nutritional education about anaemia to teenagers, using visual and audiovisual media simultaneously is recommended to get effective results.

Keywords: anemia, knowledge, media influence, teenagers

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BACKGROUND

The World Health Organization states that more than 30% of the world's population suffers anaemia. The percentage in developed countries is 4.3-20%, and in developing countries, it is 30-48% with iron nutritional anaemia. Globally, 43% of children suffer, 38% of pregnant women, 29% of non-pregnant women, and 29% of all women of childbearing age are diagnosed with anaemia. In Indonesia, anaemia due to iron deficiency (Iron Nutritional Anemia) is a nutritional problem that has not yet been resolved in pregnant women and teenagers. Based on RISKESDAS data in 2018, there was an increase in anaemia in pregnant women by 11.8% compared to 2013. 37.1% of pregnant women suffered from anaemia in 2013, and in 2018, it was 48.9%2. This occurs because of the high prevalence of anaemia in adolescent girls, namely 25% and 17% in WUS.

Anaemia has a big impact on health, especially in pregnant women. Pregnant women with anaemia will cause bleeding in pregnant women, babies born prematurely, LBW (Low Birth Weight), heart, kidney and brain problems and can even cause the mother to die during childbirth. Meanwhile, anaemia in adolescents can hinder psychomotor development and damage cognitive performance and academic performance. Therefore, the problem of anaemia must be prevented and overcome when they are still teenagers because teenagers will become pregnant women later. According to WHO, in 2011, one in three women who are not pregnant, in nearly 500 million women, suffered from anaemia caused by insufficient iron intake. Adolescent girls are particularly susceptible to iron deficiency due to menstruation, rapid growth, and increased tissue iron requirements. Giving TTD is an effective way to overcome the anaemia problem; if consumed regularly, Hb levels will be increased. Apart from that, according to research by Falkingham et al. (2010), consumption of TTD can increase concentration in women and teenagers and increase IQ in anaemia sufferers.

Research conducted by Deshmukh et al. in India (2008) stated that TTD has less impact if given during the first trimester of pregnancy, and it is recommended to have sufficient iron reserves before pregnancy. The government also supports this with a program to provide additional blood supplements to young women by the Republic of Indonesia Minister of Health Regulation No. 88 of 2014 concerning TTD standards for women of childbearing age and pregnant women11 and Circular Letter (SE) of the Indonesian Ministry of Health No. HK.03.03/V/0595/2016 concerning Providing blood supplement tablets to adolescent girls and women of childbearing age.

This TTD is generally given to junior high school (SMP)/equivalent and high school (SMA)/equivalent children. Based on the 2018 RISKESDAS, it was found that the coverage of TTD received by young women was 76.2%; of that, 76.2% and 80.9% received TTD at school (school children). Based on the figure of 80.9%, the consumption of TTD for adolescent girls with ≥52 items is only 1.4%, while <52 items is 98.6%2. This means that young women still have a low awareness of the importance of consuming TTD as a step to prevent anaemia. Many factors cause young women not to consume or still have low consumption of TTD. Therefore, this research aims to see what factors are related to TTD consumption among young women in Indonesia based on journals or research that has been extracted (filtered and summarized).

METHOD

This research design uses a literature review. A literature review study is a method used to collect data or sources related to a particular topic, which can be obtained from various sources such as research articles.

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Database Search and Identification Strategy

Researchers obtained the research results database used in this research through exploration using Proquest, PUBMED, Sage Journals, JSTORE, Science Direct, Taylor and Francis, DOAJ, WorldCat, Emerald, and SpringerLink sources, totalling 9 research articles. Search for articles using the title: education of anaemia to improve adolescent knowledge. Appropriate articles were taken for further analysis. The following are the inclusion and exclusion criteria for research articles that have been reviewed: Inclusion Criteria: Articles using adolescent samples, research articles with a period of 2015-2020 (last five years), articles in English, types of published articles and open access originals (full text) with the type of intervention study/experimental study, the research article's area coverage in developing countries in the world, educational theme articles about anaemia b. Exclusion Criteria: Articles with a sample of married teenagers, Research articles with more than the last five years, Articles in Indonesian and Arabic, Articles with abstracts only, Experimental articles that do not use media, Articles with the theme of anaemia caused by thalassemia.

Data extraction

The PRISMA (Preferred Reporting Item for Systematic Review and Meta-Analysis) diagram yielded 3,808 articles from various database sources. After combining them, there are 321 similar research articles, so the total number of research articles is 3,487. Then, the articles were adjusted according to the title and abstract, and only 15 articles were obtained, four of which did not have full access, so the remaining 11 articles were adjusted again to the inclusion criteria. After adjusting to the inclusion criteria, there was 1 article that discussed thalassemia anaemia, and 1 article did not use media, which was included in the exclusion criteria. The final total was nine articles that met the literature review criteria.

Data Synthesis

This Literature Review is synthesized using a narrative method by grouping similar data according to the results measured to answer the objectives of the research article by the criteria, then collected and made a summary including the name of the researcher, year of publication of the article, research objectives, type of research and a summary of the results or findings.

RESULTS

Research Flow

This research uses a literature review method by grouping articles according to the data related to the problem formulation in the research. Data obtained from various databases is collected in one document, which is used to answer the problems that have been formulated. The initial step is to choose a topic and determine the research objectives. The PRISMA (Preferred Reporting Item for Systematic Review and Meta-Analysis) diagram was used as the research protocol in searching for articles to be reviewed. A total of 3,808 articles were obtained from various database sources, consisting of Proquest 1,603 articles, PUBMED 39 articles, Sage 331 articles, JSTORE 84 articles, Science Direct 339 articles, Taylor and Francis 330 articles, DOAJ 12 articles, Worldcat 215 articles, Emerald 32 articles and Springer 823 articles. After combining them, there are 321 similar research articles, so the total number of research articles is 3,487. Then, the articles were adjusted according to the title and abstract, and only 15 articles were obtained, four of which did not have full access, so the remaining 11 articles were adjusted again to the inclusion criteria. After adjusting to the inclusion criteria, there was 1 article that discussed thalassemia anaemia, and 1 article did not use media, which was included in the exclusion criteria. The final total was nine articles that met the literature review criteria. The results of this literature review research are displayed in table form by comparing the article with other articles that have met

the inclusion criteria, and the discussion section will explain the findings contained in the articles.

No	Researcher , year , country, research design	Title	Location, duration of intervention, frequency	Research sample	Description intervention	Pre-test average	Post-test average	Research results (p-value)
	Rukhsana Aslam Ayub et al , 2015, Pakistan, Intervention Study Exploratory	Improving health literacy of women about iron deficiency anemia and civic responsibility of students through service learning	Community female , 1 month , -	n = 65	Providing SL (service learning) to samples and pamphlet media pictures and posters for increase score knowledge about IDA	40.9%	88.1%	Happen enhancement score knowledge ($p < 0.001$)
	Marwan O. Jalambo et al , 2017, Palestine, RCT	Improvement in Knowledge, Attitude and Practice of Iron Deficiency Anaemia among Iron-Deficient Female Adolescents after Nutritional Educational Intervention	Gaza Strip, 3 months , 9 sessions (1 ½ hours/session)	n = 89	Give education nutrition to group intervention with using posters, booklets, brochures and methods lectures , presentations , discussions .	22.7%	90.9%	Happen enhancement significant mark knowledge average teenagers ($p < 0.001$)
	Lina Bandyopadhyay et al , 2017, India, Quasi Experiment	Intervention for improvement of knowledge on anemia prevention: A school-based study in a rural area of West Bengal	School , 2 weeks , 3 sessions lecture (30 minutes / session)	n = 95	Give education about anemia with use method lectures and media in the form of posters and booklets	2.07	4.25	Happen change average knowledge score about anemia ($p = 0.000$)
	Srinivasan Gandhi, 2020, India, Pre and Post Test design	Effectiveness of Video Teaching Program on Knowledge about Anaemia among Countryside Children with Anaemia	School , 7 days , 45 minutes	n = 150	Providing video media to youth groups	12.19	24.90	Happen enhancement average score knowledge teenager after given education with anemia learning video program ($p < 0.001$)

	Ali Alami et al , 2019, Iran, Quasi Experiment	The effect of educational intervention on iron and Vitamin D consumption based on the theory of planned behavior in Iranian adolescent girls	School , 1 month , 4 sessions (2 hours/ session)	n = 175	Give education with using video and pamphlet media about knowledge consume Fe and Vitamin D	20.65	23.74	Happen enhancement significant mean knowledge score ($p < 0.001$)
	Monika Singh, 2019, India, Pre and Post Test design	Knowledge, Attitude and Practice Change about Anemia after Intensive Health Education among Adolescent School Girls of Delhi: An Intervention Study	School , 6 months , -	n = 106	Give education health to sample with using power point presentation media , pamphlets , visual displays	9.3	19.89	Happen change significant after given intervention (-)
	Siti Nurhayani , 2019, Indonesia, Quasi Experiment	The Effect of Edutainment Use on Improving Knowledge, Attitudes, Balanced Nutrition Fulfilling Behavior in the Prevention of Anemia and Changes in Hemoglobin Levels in Adolescent Girls (Case Study of SMPN 4 Banjarbaru)	School , 3 months , 4 intervention sessions	n = 90	Give education For Prevent anemia by using video and pamphlet media	16.3	38.5	Happen improvement average knowledge score significant juvenile ($p < 0.000$)
	Reni Zuraida et al , 2020, Indonesia, Quasi Experiment	The Effect of Anemia Free Club Interventions to Improve Knowledge and Attitude of Nutritional Iron Deficiency Anemia Prevention among Adolescent Schoolgirls in Bandar	School , 3 months , -	n = 102	Give intervention For increase knowledge and attitudes teenager with using media modules education as well as invite teacher school For give material about nutrition to	44.8	79.85	It happened enhancement average knowledge score significant ($p < 0.001$)

	Lampung City, Indonesia			student			
Jurianto Gambir et al ., 2020, Indonesia, Quasi Experiment	A nutrition diary-book effectively increases knowledge and adherence of iron tablet consumption among adolescent female students	School , 2 months , -	n = 50	Providing book media daily in the group intervention	7.08	10.56	Happen enhancement average score knowledge ($p < 0.05$)

DISCUSSION

Providing teenagers with education about anaemia can be an action to prevent anaemia. Research shows that low knowledge influences the incidence of anaemia in teenagers. *Educational media* is a tool that makes conveying information easier (Nurrita, 2018). The visual media used in the nine articles analyzed were nutrition diaries, booklets, posters, brochures, illustrated pamphlets, power points, and educational modules. Meanwhile, the audio-visual media used is video. From the articles reviewed, five of the nine articles stated that there was an increase in the average knowledge score after being given education using visual media such as diaries, booklets, power points, visual displays, posters, pamphlets, and educational modules ($p < 0, 05$). one of nine articles stated that there was a change in the average knowledge score after being given education using audio-visual media in the form of video ($p < 0.05$). Moreover, three of the nine articles said there was a change in the average knowledge score after education using visual and audio-visual media such as videos, posters, brochures, pamphlets and booklets ($p < 0.05$).

The results of a study prove that several factors can cause anaemia, including breakfast habits, nutritional status, protein intake, consumption patterns of foods that inhibit iron absorption, and long menstruation (Jaelani, 2017). The first is the breakfast habit, breakfast which teenagers often miss and can result in anaemia due to lack of energy and nutrients consumed (Jaelani, 2017); secondly, nutritional status, in a study showing that as many as 60% of mothers with nutritional status at risk of CED (chronic energy deficiency) experienced mild anaemia (Aguscik, 2019); thirdly, protein intake plays a role in transporting iron to the spinal cord to form new haemoglobin. If protein intake is lacking, it can cause iron not to reach the spinal cord, and there is a risk of anaemia. A study shows that the lower the consumption of protein intake, the higher the level of protein intake. Haemoglobin is getting lower too (Rahmad, 2017); fourthly, the pattern of consumption of iron absorption inhibitor foods, the habit of consuming iron inhibitors or iron absorption inhibitors can influence the incidence of anaemia, in line with research conducted by Masthalina (2015) which proves that there is a significant relationship between Fe inhibitor factors and anaemia status (Mashtalina, 2015). Finally, research conducted by Jaelani (2017) shows a significant relationship between the length of menstruation and the incidence of anaemia in young women (Jaelani, 2017).

Providing education to increase adolescents' knowledge about anaemia can affect adolescent behaviour, with sufficient knowledge about anaemia enabling adolescents to change their behaviour towards a healthy, anaemia-free lifestyle. The results of research conducted by Martini (2015) show that iron deficiency anaemia can cause a decrease in

physical ability, work productivity and thinking ability, where the impact of anaemia on adolescent girls is a decrease in the immune system, which makes adolescent girls susceptible to disease, disrupting cell growth. The body can cause adolescent growth to be less than optimal, and there is a lack of concentration in learning for young women, which causes a decrease in young women's achievement and results in a physical appearance that is pale, lethargic and uninspired (Martini, 2015). Another effect of providing education is also causing changes in teenagers' eating patterns, as it is known that a lack of information and knowledge about the causes of anaemia can cause teenagers' lack of iron consumption. This can be a major factor in the occurrence of anaemia in teenagers. A study proves that providing nutritional education effectively increases the average iron intake in adolescent girls (Marfuah, 2016).

Providing education can make teenagers aware of the importance of consuming iron and can avoid the incidence of iron deficiency anaemia. Apart from providing education using media, other factors may be the cause of increasing teenagers' knowledge. According to Mulyono (2018), there are several types of learning methods, including lecture methods, demonstration methods, discussion methods, question and answer methods, simulation methods, assignment and recitation methods, group work methods, problem-solving methods, and team teaching methods. , training method (drill), and field trip method (Mulyono, 2018). Lubis's (2013) research results proved a change in knowledge scores after being given education using lecture and discussion methods (Lubis, 2013).

This research emphasizes that not only can media influence increasing knowledge scores, but the learning methods used can also influence increasing knowledge scores. A study says that many teenagers use cell phones to watch content in videos, play games, and use other social media. Several surveys also reveal an interesting change in which more and more teenagers like to watch videos on their cell phones. In this way, video has become one of the audiovisual media often watched by teenagers and can be used as an educational platform regarding anaemia prevention (Rideout, 2019). The disadvantage of using visual media in learning is the need for more explanation (details of the material) or even no explanation, which can make teenagers misinterpret the material. Likewise, with audiovisual, sometimes the sound from audiovisual media cannot be heard clearly; for this reason, speakers who can explain material about anaemia to teenagers are needed (Iman, 2018). However, using visual and audiovisual media simultaneously makes learning more interesting. It does not make teenagers bored, and coupled with the use of appropriate learning methods by presenters/researchers, it can help teenagers increase their knowledge about anaemia after being given intervention for a certain time (Hasan, 2016).

CONCLUSION

The conclusions from this Literature Review research are: 1. 5 out of 9 articles prove that visual media is effectively used to help increase teenagers' knowledge about anaemia 2. 1 out of 9 articles prove that videos are as effective as audiovisual media used to help increase teenagers' knowledge about anaemia 3. There are 3 out of 9 articles that prove that visual and audiovisual media are effectively used simultaneously to help increase teenagers' knowledge about anaemia 5.2 Suggestions For future researchers when conducting literature review research, they can use the PRISMA (Preferred Reporting Item for Systematic Review and Meta-Analysis) as a research protocol in selecting or searching for articles you want to review. For educational institutions that wish to educate teenagers about anaemia, it is recommended to use visual and audiovisual media simultaneously as a tool that makes the teaching and learning process easier.

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