REVIEW ARTICLE

# The Effectiveness of Nutrition Education Using Audio-Visual Media on Nutrition Knowledge in Anemic Adolescents: A Scoping Review

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## ABSTRACT

***Background:*** Anemia is a nutritional problem that occurs throughout the world. Lack of nutritional knowledge can cause anemia in adolescents. Nutrition education with audio-visual media is one way to increase knowledge and decrease the incidence of anemia. ***Objective:*** To analyze the effectiveness of nutrition education using audio-visual media on knowledge in anemic adolescents. ***Methods:*** This review used the PRISMA-ScR guidelines with three article search databases. Articles found were screened. Eligible articles in accordance with the inclusion criteria were reviewed. ***Results:*** A total of three articles were reviewed showing that intervention using video significantly increased the knowledge of adolescent girls compared to the control group ($p<0.005$) and was effective in preventing anemia. ***Conclusion:*** Nutrition education with audio-visual media is effective for increasing nutritional knowledge and preventing anemia in adolescent girls.

**Keywords:** *Anemia, Adolescent Girls, Audio-Visual, Nutrition Education, Knowledge*

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## INTRODUCTION

Anemia is a global health problem in a worldwide and can occur throughout the human life cycle, especially in pregnant women, children, and adolescent girls.[1] Globally, in 2019 it is estimated that more than 70% of children will experience anemia and more than 50% of women aged 15-49 years will experience it.[2] In Indonesia, anemia is a common problem in pregnant women increasing from 37% in 2013 to 48.9% in 2018. Meanwhile, 48.9% of adolescents aged 15-24 years experienced anemia.[3]

Anemia is a condition where the number of red blood cells or hemoglobin concentration is below normal levels so the oxygen capacity is not sufficient for the body's physiological needs.[1] According to WHO, the classification of severe anemia is when the hemoglobin level is below 8g/dl, moderate anemia is 8-10.99 g/dL and mild anemia is 11-11.9 g/dL while haemoglobin levels are 12 g/dl included in the normal category.[4]

Adolescence is a critical period of growth, maturation of reproduction, and transition which requires an increase in the need for nutrients it makes adolescents more vulnerable to malnutrition, especially for adolescent girls.[5] A study proves that female adolescents are more at risk of anemia when compared to male adolescents ($p<0.001$).[6] This is caused by the menstrual cycle, protein intake, iron and vitamin C intake, nutritional status, and eating habits to infectious diseases.[7,8]

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Anemia in adolescents can also be affected by a lack of knowledge.[9] Knowledge is information collected from the learning process of an object through one's senses.[10] Good nutritional knowledge will make a person prefer to consume healthy foods such as fruits and vegetables rather than foods high in fat and carbohydrates.[11] A prior study found that there was a relationship between nutritional knowledge and the incidence of anemia.[12] Moreover, adolescent girls with lack nutritional knowledge have a 13.5 times greater risk of experiencing anemia.[13]

Nutrition education with audio-visual media can increase knowledge about iron, and provide information and motivation to someone about food choices according to socio-economic, eating habits, and food availability which will later be practiced in daily eating habits so as to prevent anemia.[10,14,15] A study found that nutrition education with audio-visual media proved effective in increasing knowledge in anemic adolescents.[16] In addition, other studies also prove that nutrition education using audio-visual media can increase knowledge and positive attitudes about anemia prevention in anemic adolescent girls.[17]

## METHODS

This scoping review was carried out using the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews) checklist.[18] Inclusion criteria in this research are original articles, discussions about knowledge and anemia, published in English, open access, research subjects for young women aged 12-19 years, and articles published between 2019-2023 through Google Scholar, PubMed, and Science Direct. Search articles using the keywords "Anemia OR iron deficiency" AND "Nutrition Knowledge OR Nutrition Education" AND "Audio-Visual OR Video" AND "Adolescents Girl OR Girl Teenagers". Articles found will be screened through titles and abstracts according to the inclusion criteria.

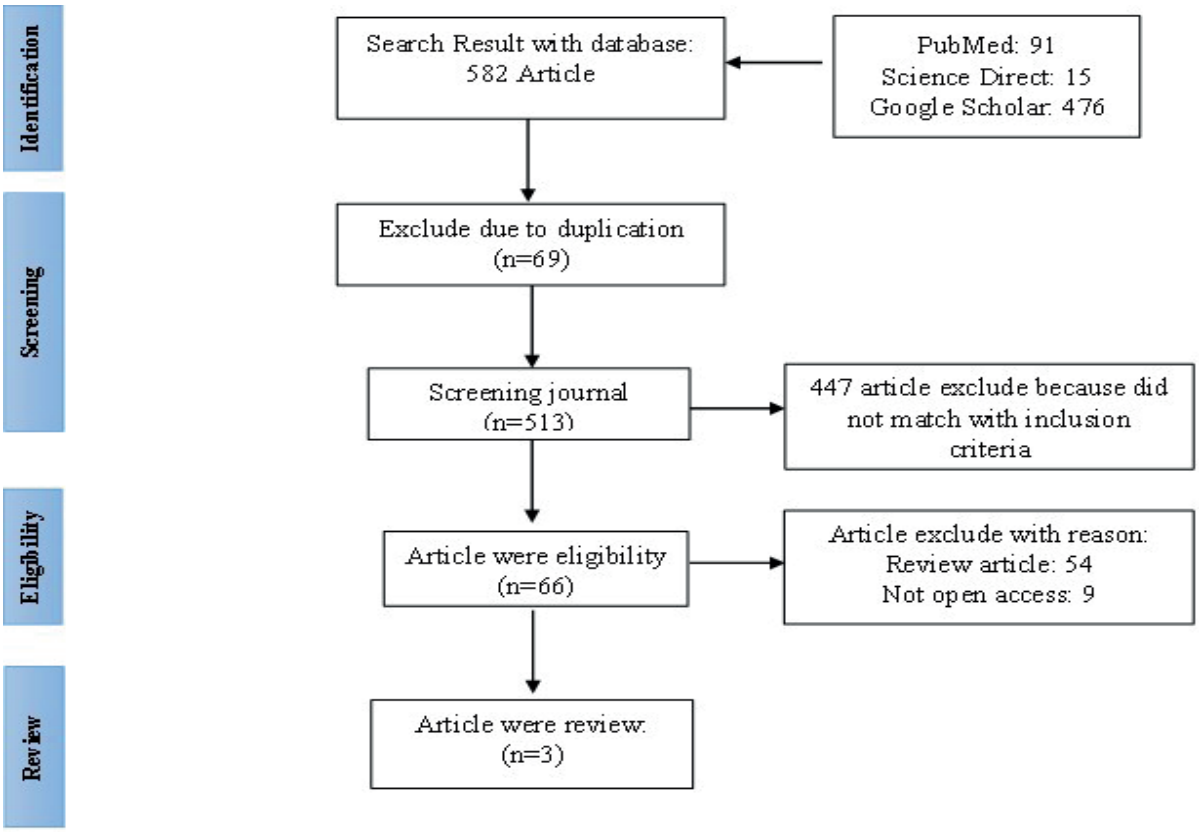


**Figure 1:** Flowchart of study selection

## RESULTS

***Overview of Studies:*** Based on the search results, 582 articles were found through the PubMed, Science Direct and Google Scholar databases. As many as 69 articles were excluded due to duplication, screening was carried out on 513 articles, then 447 articles were excluded because they did not meet the inclusion criteria. There were 66 articles that were eligible then as many as 54 articles were excluded because they were not original articles, and 9 articles were not open access. Therefore, this review was carried out on 3 articles that met the inclusion and exclusion criteria.

***Data Synthesis:*** The articles that have been found are then grouped based on title, design, intervention sample and the following research results:

## DISCUSSION

Knowledge is a factor that can influence the incidence of anemia in adolescent girls.[22] Someone with good nutritional knowledge is often associated with healthier eating habits such as the consumption of fruits and vegetables, food sources of iron, and has an impact on preventing anemia.[15,23] Otherwise, adolescent girls with less knowledge are at risk of experiencing anemia.[24]

Nutrition education is one way that can be done to increase knowledge. Nutrition education aims to change attitudes and behavior in a more positive direction related to nutrition and food. Education requires media so that the information conveyed is more effective and efficient and thereby, it can be accepted and practiced by adolescents.[25] Based on the 3 articles that have been found, the media used for nutrition education is by using videos in the intervention group. The results showed that there was an increase in the knowledge score before and after the nutrition education was carried out with this media. There was an increase in the knowledge score in the intervention group with an average of 2.35 to 8.5 compared to the control group. Audio-visual media is media that contains sound and image elements so that it is more effective in conveying the information that has been conveyed.[26] These results are in line with a review that stated that audio-visual media is effective in increasing adolescent knowledge.[27] Good knowledge will influence a person's attitudes and practices for the better so that it has an impact on preventing anemia.[9,28] The research conducted by Madestria et al.[19] showed that there was an increase in attitude scores in adolescents after carrying out nutrition education with audio-visual media. In addition, the results of the study also showed better changes in habits in adolescent

**Table 1.** Synthesis and analysis Data

| Authors, year | Title | Design | Sample | Intervention | Findings |
|---|---|---|---|---|---|
| Madestria et al., (2021)[19] | Effect of education through video and packaging modifications of iron tablets on female Adolescent behavior in the iron supplementation intake in SMPN 2 and SMPN 1 Parigi | quasi-experimental design with pretest-posttest | 62 respondents, 12-15 years old | Video and modification of iron tablet packaging | Educational media using video has a significant effect on knowledge, attitudes, and frequency intake of iron supplementation |
| Aisah et al., (2022)[20] | Animated educational video using health belief model on the knowledge of anemia prevention among female adolescents: An intervention study | A quasi-experimental method with a randomized pre-test and post-test control group design | 161 female adolescents, 14-19 years | Nutrition education using animated video | Nutrition education using animated video significantly increased the score of knowledge of anemia prevention (P=0.001) |
| May Astuti & Kurniasari, (2022)[21] | The Effect of Nutritional Education through Poster Media and Video on the Improvement of Knowledge about Anemia in Adolescent Princess | Quasi-experimental with a pre-and post-test group | 40 adolescent girls, 12-18 years | Poster (control group) and video (intervention) | Video education is more effective to increase the knowledge of anemia compared to posters in adolescents |

girls after receiving interventions by routinely consuming iron supplements to prevent anemia. However, our search for articles was limited to only three databases, article publications in English, and the range of article publications is only 5 years.

## CONCLUSION

In this review, we conclude that nutrition education using audio-visual media is significant to increased nutrition knowledge and effective to prevent anemia in adolescent girls.

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