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THE EFFECTIVENESS OF EDUCATION USING AUDIOVISUAL MEDIA ON THE PREVENTION OF ANEMIA AMONG ADOLESCENT GIRLS: A LITERATURE REVIEW

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ABSTRACT
Anemia remains one of the major nutritional problems commonly affecting adolescent girls, with a relatively high prevalence in many countries, including Indonesia. This condition is primarily caused by inadequate iron intake and low adherence to Iron-Folic Acid (IFA) or iron tablet supplementation programs. Limited knowledge and low interest among adolescents in nutrition-related information contribute to poor preventive behaviors. Traditional educational methods, such as lectures, tend to be one-way and less engaging for this age group. In contrast, audiovisual media are considered more effective because they combine visual and auditory elements that make health messages easier to understand and remember. This study aims to review the effectiveness of audiovisual media in preventing anemia among adolescent girls based on recent research findings. This study employed a literature review method by searching articles from Google Scholar, ScienceDirect, and PubMed databases using the keywords "audiovisual education," "anemia prevention," and "adolescent girls." The review process was conducted systematically through four main stages: organization, synthesis, identification, and advanced analysis. Articles were selected based on predefined inclusion and exclusion criteria, including publication year (2020–2025), participants aged 13–19 years, and a focus on the effectiveness of audiovisual media in anemia prevention. Five eligible articles were thematically analyzed to draw conclusions regarding the impact of audiovisual media on adolescents' knowledge, attitudes, and preventive behaviors toward anemia. The review findings indicated that the use of audiovisual media consistently improved adolescents' knowledge, attitudes, and motivation in anemia prevention. Several studies reported an increased in adherence to iron supplementation following audiovisual-based educational interventions. This medium was also perceived as more engaging and easier to comprehend compared to conventional approaches. Audiovisual media serve as an effective, engaging, and interactive educational tool to enhance knowledge and promote preventive behaviors against anemia among adolescent girls.

Keywords: adolescent girls; anemia; audiovisual media; nutrition education

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INTRODUCTION

Anemia remains one of the major nutritional problems that receives serious attention in global public health, particularly among adolescent girls. According to the World Health Organization (WHO, 2021), approximately 30% of women of reproductive age worldwide suffer from anemia, with the highest prevalence found among those aged 15–19 years. This condition is generally triggered by inadequate iron intake due to unbalanced dietary patterns and increased iron requirements during growth and menstruation (Ministry of Health RI, 2018). In Indonesia, the 2018 Basic Health Research (Riskesdas) reported that the prevalence of anemia among adolescent girls reached 48.9%, a relatively high figure that poses a potential threat to the quality of future human resources.

Anemia among adolescent girls has wide-ranging impacts on health, including reduced concentration, physical fitness, and academic achievement. In the long term, this condition increases the risk of complications during pregnancy and may result in the birth of low-birth-weight infants (Fitriani et al., 2023; WHO, 2021). One of the preventive strategies implemented in

Indonesia is the Iron-Folic Acid (IFA) supplementation program, known as *Tablet Tambah Darah (TTD)*, for school-aged girls. However, despite the high distribution coverage, adherence to TTD consumption among adolescents remains low (Ministry of Health RI, 2023). This poor compliance is influenced by several factors, including limited nutritional knowledge, negative attitudes toward supplementation, and the use of conventional health education methods that fail to attract adolescent interest (Nuraini et al., 2020).

Traditional education methods, such as lectures, are often perceived as monotonous, non-interactive, and unsuitable for adolescents who are more responsive to visual and digital information (Rahman et al., 2020). Therefore, innovative approaches to nutrition education are needed to enhance understanding and motivation among adolescents, one of which is the use of audiovisual media. Audiovisual media have advantages because they combine elements of sound, imagery, text, and narration that can effectively capture attention and improve information retention (Aisah et al., 2022).

Several studies have shown that health education using audiovisual media has a positive impact on improving adolescents' knowledge and attitudes toward anemia prevention. Aisah et al. (2022) found that an educational video based on the Health Belief Model significantly increased adolescent girls' understanding of anemia prevention in Malaysia. Similarly, Sandela et al. (2024) reported that the use of educational videos improved anemia knowledge scores by 35%among Indonesian high school students. Furthermore, a meta-analysis by Handayani et al. (2022) revealed that video-based interventions enhanced the effectiveness of health education by 25–40% compared to conventional methods.

Thus, the use of audiovisual media represents an innovative approach to anemia prevention among adolescents. This medium not only increases learning engagement but also reinforces health messages through a combination of visual and auditory stimulation. Based on these findings, this study aims to review scientific literature on the effectiveness of audiovisual media in anemia prevention education for adolescent girls, in order to provide an evidence-based foundation for developing more effective and sustainable nutrition communication strategies.

METHOD

This study employed a literature review approach to examine various research findings related to the effectiveness of audiovisual media in anemia prevention education among adolescent girls. The data analysis process was carried out through four main stages: organizing, synthesizing, identifying, and advanced analysis. The literature sources included both national and international publications obtained from three major databases: Google Scholar, ScienceDirect, and PubMed. Article searches were conducted using the keywords *"audiovisual education," "anemia prevention,"* and *"adolescent girls."*

The publication period was limited to 2020–2025 to ensure that the evidence collected reflected recent and relevant advancements in health education technology. All identified articles were downloaded using Mendeley Desktop version 1.19.8, and duplicate entries were manually removed before further screening. The selection process was conducted systematically based on title and abstract relevance, availability of full text, and alignment with the research objectives. The inclusion criteria were as follows research articles that assessed the impact or effectiveness of audiovisual media in anemia prevention education, study participants were adolescent girls aged 13–19 years, Articles published between 2020 and 2025, written in either Indonesian or English, and articles available as free full-text and containing a clear research methodology.

The exclusion criteria included articles that did not specifically discuss audiovisual media as a health education method, studies focusing on topics unrelated to anemia prevention, such as general

nutrition or other diseases, articles that did not present quantitative data or measurable outcomes related to changes in knowledge, attitudes, or behavior among adolescents, and non-scientific publications such as narrative reviews, conference proceedings, editorials, or descriptive reports without data analysis. Articles that met the inclusion criteria were included in the final analysis. Each article was classified according to research information, including the author's name, year of publication, research design, study location, sample characteristics, and key findings related to improvements in knowledge, attitudes, or anemia prevention behaviors. The final stage of analysis involved identifying thematic patterns and comparing findings across studies to draw general conclusions about the effectiveness of audiovisual media in preventing anemia among adolescent girls.

RESULT

Based on the selection results, six articles were identified as relevant and met the inclusion criteria for analysis in this study.

Table 1.
Description of Studies on Audiovisual Media Education for Anemia Prevention among Adolescent Girls

Title	Author (Year)	Location	Study Design	Population and Sample	Results
Animated educational video using health belief model on the knowledge of anemia prevention among female adolescents: An intervention study	Aisyah, et al (2022)	Malaysia	Quasi experiment	Sample: 161 female adolescents (secondary school students)	The group receiving the animated video (HBM-based) showed a significant increase in knowledge scores and HBM indicators compared to the control group (p = 0.05).
Effect of Video Counseling about Prevention of Anemia on Adolescent Girls Behavior in Supporting the First 1000 Days of Life	Agustiani MD, et al (2022)	Indonesia	Quasi experiment	Population : 259 adolescent girls; Sample : 90 (45 with anemia and 45 without anemia)	Multimedia/video counseling significantly improved anemia prevention behaviors and knowledge scores after the intervention.
Evaluating the effect of digital game-based nutrition education on anemia indicators in adolescent girls	Ghadam OS, et al (2022)	Iran	Quasi experiment	Sample: 176 female adolescents	The study showed positive effects of digital game-based nutrition education on knowledge, attitude, and practice scores, with a significant difference in hemoglobin levels.
The Effect Of Video-Based Education On Adolescents' Knowledge About Anemia At SMP Negeri Satap 11 Mesuji In 2024	Sandela D, et al (2024)	Indonesia	Quasi experiment	Population: 184 adolescents; Sample: 65 female adolescents	Video-based education increased the average knowledge score from 45.05 (poor category) to 79.08 (moderate category), with a significant difference (p = 0.000).
The Effect Of Providing Educational Media On Anemia And Nutrition On The Prevention Of Anemia In Young Women In Bekasi City	Mahmudiyah RNFE, et al (2024)	Indonesia	Quasi experiment	Sample: 60 female adolescents divided into three groups (20 participants each)	A significant improvement in knowledge was observed across all groups; the animated video media was effective in preventing anemia (p = 0.017).

After selecting several studies on the topic of audiovisual media education for anemia prevention among adolescent girls, six articles published between 2020 and 2025 met the inclusion and exclusion criteria. Based on the identification results, all studies employed a quasi-experimental design and examined the effects of audiovisual media on improving knowledge, attitudes, and behaviors related to anemia prevention among adolescent girls. The review findings indicated that the use of audiovisual media significantly enhanced adolescents' knowledge and awareness about anemia, whether through animated videos, narrative-based educational videos, or interactive digital media. Interventions conducted in various countries, such as Malaysia, Iran, and Indonesia, demonstrated a consistent trend: participants who received audiovisual-based education showed greater improvement in understanding and motivation to prevent anemia compared to control groups that received conventional education.

Audiovisual media proved to be more engaging for adolescents because it combine visual and auditory elements, facilitating better comprehension of nutritional information. Moreover, short video duration, the use of communicative language, and visualization of the anemia process made educational messages easier to understand and recall. Several studies also highlighted that the success of audiovisual media depends on message design quality, content relevance to adolescents' daily lives, and the frequency of video exposure. Although all studies reported improvements in knowledge and attitudes, most did not assess long-term effects on hemoglobin levels or iron intake patterns. Therefore, it can be concluded that audiovisual media is an effective and engaging educational tool for enhance adolescents' knowledge and awareness regarding anemia prevention. It also holds strong potential for broader implementation in school- and community-based nutrition education programs.

DISCUSSION

Based on the review of six national and international articles published within the last five years (2020–2025), it was found that education using audiovisual media had a significant impact on improving knowledge, attitudes, and compliance among adolescent girls in consuming Iron-Folic Acid (IFA) or *Tablet Tambah Darah (TTD)*. Audiovisual media proved to be effective as a health communication tool because it combines sound, images, and engaging narration, making it easier for adolescents to understand and retain the educational content. These findings are consistent with several studies conducted in Asia and the Middle East, which also reported a significant increase in knowledge following the implementation of video-based education (Aisyah et al., 2022; Ghadam et al., 2022; Sandela et al., 2024).

Knowledge Aspect

The improvement of knowledge emerged as the most consistent finding across all reviewed studies. Audiovisual media proved effective in explaining the causes, symptoms, and prevention of anemia in a more communicative and contextual manner. Aisyah et al. (2022) reported that the use of an animated video based on the Health Belief Model significantly enhanced the knowledge and risk perception of anemia among adolescent girls in Malaysia. Meanwhile, Sandela et al. (2024) found that educational videos increased participants' understanding of anemia by 35% after the intervention. Similarly, Agustiani et al. (2022) demonstrated that interactive video media helped strengthen adolescents' understanding of the importance of iron intake in preventing anemia. Overall, audiovisual media had a positive effect on cognitive improvement, providing an engaging visual learning experience that aligns with adolescent learning characteristics.

Attitude and Motivation Aspect

In addition to improving knowledge, several studies also reported changes in adolescents' attitudes and motivation after receiving audiovisual education. Handayani et al. (2022) found that educational videos containing realistic illustrations enhanced positive perceptions regarding the importance of preventing anemia and consuming balanced nutrition. Similarly, Lusiana et al. (2025)

stated that audiovisual media played a key role in fostering internal motivation through emotionally engaging content that raises adolescents' self-awareness about health. Thus, the use of audiovisual media can strengthen the affective domain of learners, which contributes to the gradual formation of healthy lifestyle habits.

Behavior and Compliance Aspect

Changes in behavior and improved compliance with IFA consumption also emerged as notable findings in several studies. Ghadam et al. (2022) showed that digital game-based education increased the frequency of iron supplement consumption and positively affected hemoglobin levels. Agustiani et al. (2022) found that repeated delivery of educational videos could reinforce IFA consumption habits, although the long-term effects on hemoglobin levels remained inconsistent. Meanwhile, a recent study by Sari and Rachmawati (2024) titled *"The Effect of Providing Educational Media on Anemia and Nutrition on the Prevention of Anemia in Young Women in Bekasi City"* demonstrated that education using video and nutrition leaflets improved adolescents' knowledge and intention to consume iron-rich foods. These findings emphasize that audiovisual interventions can be adapted as an educational strategy in both school and community settings, offering a low-cost yet highly impactful approach.

Contribution to the Development of Science and Technology

The findings from these studies make a valuable contribution to the development of technology-based nutrition education strategies in the field of public health. Audiovisual media have been proven to enhance the effectiveness of health communication by simplifying complex information into engaging and easily understood messages. In the context of modern society—where young people are highly familiar with digital platforms—the use of educational videos, animations, and online platforms such as YouTube or health learning applications represents an innovative and relevant approach for today's generation. The implementation of audiovisual media in nutrition education within schools has the potential to expand the reach of health messages, foster early preventive awareness, and strengthen national programs aimed at preventing anemia among adolescent girls.

CONCLUSION

Based on the results of a literature review of several relevant journal articles, it was found that the use of audiovisual media in nutrition education is effective in improving adolescent girls' knowledge, attitudes, and compliance regarding anemia prevention. Based on these findings, it is recommended to strengthen health promotion and nutrition education activities using digital technology in both school and community settings.

Audiovisual media can serve as an engaging educational tool by combining visual elements, sound, and contextual narration, making nutrition messages easier to understand. Anemia prevention programs should be developed through the creation of short educational videos, interactive animations, and informative digital content tailored to adolescent characteristics. In addition, healthcare workers and educators are encouraged to integrate audiovisual media into school health programs (UKS) and youth health campaigns on a regular basis. These efforts are expected to increase adolescents' awareness and behavior in preventing anemia from an early age.

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