Effectiveness of Education Through Tiktok Social Media in Increasing Anemia Understanding Among Adolescent Girls

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ABSTRACT

Anemia remains a common health issue among adolescent girls, affecting their quality of life and academic performance. Conventional educational methods are often ineffective for the digital generation, making TikTok a potential alternative platform for engaging health education. This systematic literature review, based on the PRISMA 2020 framework, evaluated the effectiveness of TikTok-based educational interventions in improving knowledge and attitudes regarding anemia prevention among adolescent girls. Article searches were conducted through PubMed, Google Scholar, ResearchGate, and Mendeley for publications from 2021 to 2025, yielding seven studies that met inclusion criteria. Most studies reported increased knowledge following intervention, with average improvements of 20–45%. Six of seven articles demonstrated statistically significant effects on knowledge and attitudes. Short video formats combining visual and audio elements facilitated comprehension and information retention. Integrating TikTok with supporting media such as infographics improved understanding by up to 30% compared to using a single medium. In conclusion, TikTok is an effective medium for delivering health education on anemia to adolescent girls.

Keywords: Anemia, Adolescent Girls, Health Education, TikTok

Introduction

Anemia is a serious global public health issue that predominantly affects vulnerable groups such as young children, adolescent girls, women of reproductive age, as well as pregnant and postpartum women. The WHO estimates that approximately 40% of children aged 6–59

months, 37% of pregnant women, and 30% of women aged 15–49 years worldwide experience anemia.[1] In Indonesia, the prevalence of anemia also remains high. Data from the 2018 Basic Health Research (Riskesdas) show that around 32% of adolescent girls suffer from anemia, while the 2023 Indonesia Health Survey (SKI) reports that the prevalence among individuals aged 15–24 years still ranges between 15.5–18%.[2,3] Furthermore, data from BKKBN 2025 indicate persistently low adherence among adolescents to balanced nutrition practices and iron consumption, further exacerbating the risk of anemia[4]. Adolescent girls are among the most vulnerable groups to anemia due to their rapid growth, which requires higher nutrient intake, combined with monthly menstruation that leads to blood loss. This condition is often worsened by irregular eating patterns, a tendency to skip breakfast, and a preference for fast foods that are low in iron and essential micronutrients. Recent studies have shown a strong association between diet quality, sleep patterns, and anemia incidence among adolescent girls in Indonesia.[5] Other risk factors—including low iron tablet consumption, nutritional status, and menstrual intensity—have also been proven to contribute to anemia prevalence[6].

Anemia among adolescent girls has broad short- and long-term consequences. Beyond physical symptoms such as fatigue, pallor, and decreased immunity, anemia can impair concentration, reduce academic performance, and affect daily productivity. In the long run, untreated anemia during adolescence may persist into adulthood and increase the risk of pregnancy-related complications, low birth weight, and impaired child growth[7,.8.] Another aspect of concern is the challenge of delivering effective health education to adolescents. Conventional methods, such as in-person counseling, are not always successful in reaching this population, as their learning preferences are increasingly centered around digital technology. Today's adolescents are considered digital natives who spend a significant amount of time on social media. TikTok, one of the social media platforms with the largest number of active users in Indonesia, has become particularly popular among teenagers. Its short, engaging, and interactive content makes TikTok a highly promising platform for health education, including topics related to anemia[9]. The urgency of this study lies in the need to identify more effective educational media that align with adolescent characteristics. Health information delivered solely through traditional methods has been shown to be less optimal in fostering understanding and awareness. In fact, increasing anemia-related knowledge during adolescence is crucial to preventing long-term consequences that may affect individual well-being and the health of future generations[10]. Therefore, utilizing social media particularly TikTok as a health education platform represents an innovative and relevant approach worthy of exploration.

This study aims to assess the extent to which TikTok can be used as a health education tool to improve adolescent girls' understanding of anemia. Through a systematic literature

review approach, this study is expected to provide a comprehensive overview of TikTok's effectiveness compared to conventional educational media and offer scientific groundwork for developing adolescent health promotion strategies that are more adaptive to the digital era.

Material and Methods

This study employed a systematic literature review approach guided by the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework to evaluate the effectiveness of TikTok as a health education platform for improving anemia-related understanding among adolescent girls. Literature searches were conducted across PubMed, Google Scholar, ResearchGate, and Mendeley, covering publications from 2021 to 2025. The search period was carried out between September and October 2025. The targeted articles were studies examining the use of social media specifically TikTok as a medium for health education among adolescent girls. The search strategy utilized a combination of keywords, including "TikTok" and "Health Education" and "Anemia" and "Adolescent Girls," along with Boolean operators to optimize the relevance of retrieved studies. The article selection process followed the PRISMA stages, consisting of identification, screening, eligibility assessment, and inclusion. The initial search yielded 112 articles. After removing duplicates (n = 24), a total of 88 articles were screened based on their titles and abstracts. Fifty-nine articles were excluded due to irrelevance to the topic. The remaining 29 articles underwent full-text review, and 22 were excluded for using media other than TikTok, not focusing on adolescent girls, or not assessing anemia-related knowledge. Ultimately, 7 articles met the inclusion criteria and were analyzed further. The article selection flow is illustrated in the PRISMA diagram (Figure 1). The inclusion criteria for this study were: studies utilizing TikTok as an educational medium, focusing on adolescent girls, assessing improvements in knowledge or attitudes related to anemia, and available in either Indonesian or English. Articles were excluded if they had restricted access, did not investigate anemia, involved populations other than adolescents, or used educational media other than TikTok.

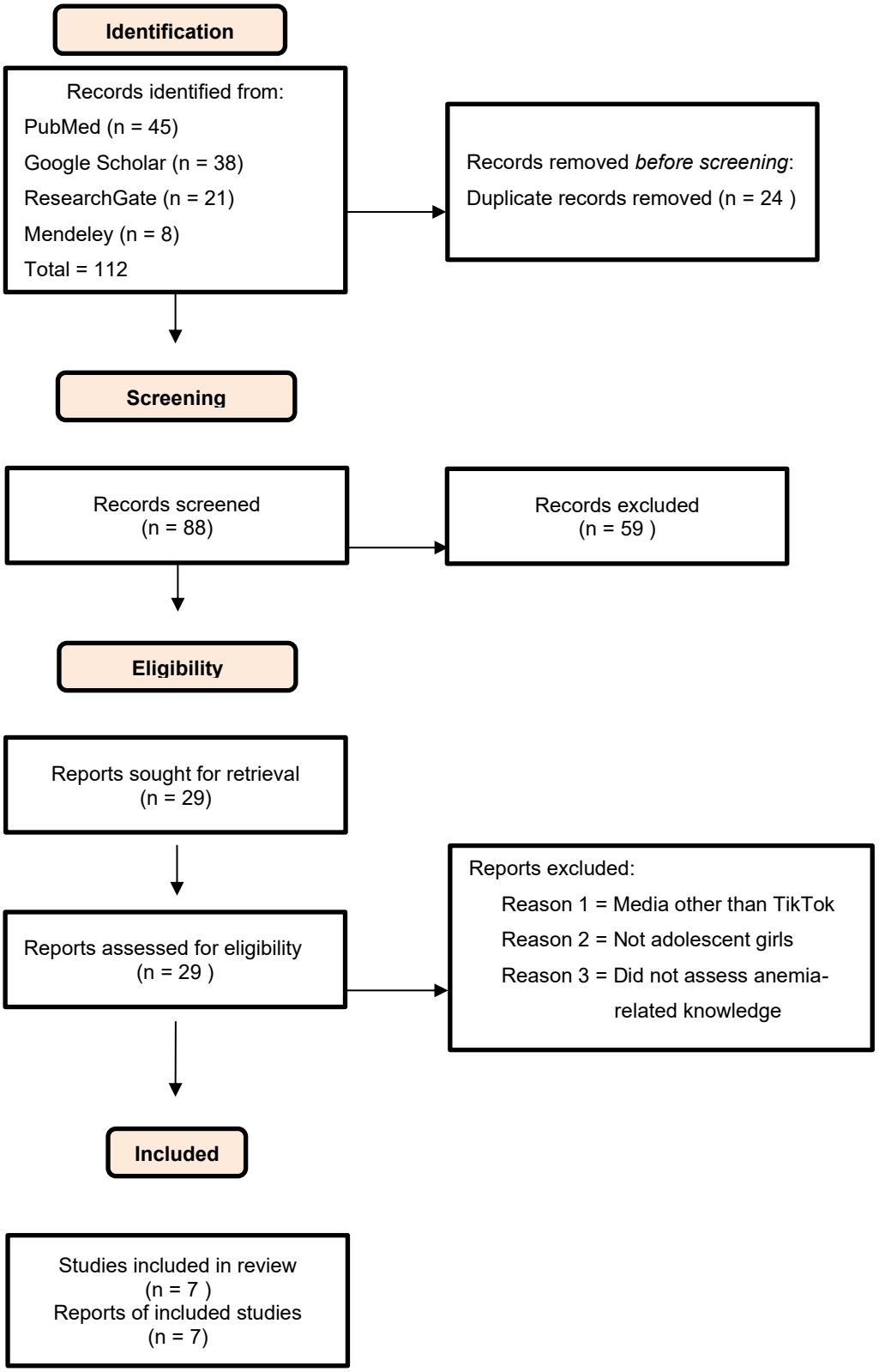

Figure 1. PRISMA 2020 flow diagram of the study selection process

Table 1. Literature review of key studies

Title	Authors and Year	Methods	Results
Effectiveness of Educational Media Instagram Reels and TikTok on Knowledge to Prevent Iron Deficiency Anemia	Kartika Pibriyanti dkk. (2025)	Quasi-experimental; 105 adolescent girls; comparison of TikTok vs Reels vs leaflet	Short-video–based social media platforms are more aligned with adolescents' learning styles.
Pengaruh Edukasi Melalui Media Sosial Tiktok Tentang Pencegahan Anemia Terhadap Pengetahuan dan Sikap Remaja Putri di SMP Negeri 1 Natar Tahun 2024	Hana Tyas Murti Ningsih dkk. (2024)	Quantitative, pre-experimental one-group pretest–posttest; 86 junior high school students (SMP Natar)	TikTok is effective due to its short and easy-to-understand video format, which increases adolescents' attention and engagement.
Pengaruh Penggunaan Media Edukasi Video Menggunakan Aplikasi TikTok Terhadap Peningkatan Pengetahuan Anemia pada Remaja Putri di SMAN Kota Jambi	Yunita Aprianti dkk. (2024)	One-group pretest–posttest; 20 senior high school girls (SMAN Jambi)	TikTok is easily accessible and well-liked by adolescents, making educational messages more readily accepted.
Pengaruh Penggunaan Media Edukasi Video TikTok dan Infografis Terhadap Pengetahuan Anemia pada Remaja Putri	Bunga Sovani Firdawiyanti & Ratih Kurniasari (2024)	Quasi-experimental; adolescent girls in Karawang	The integration of visual (infographics) and audiovisual (TikTok) media enhances information absorption.
Efektivitas Edukasi Gizi Melalui Media Video Tiktok dan Leaflet	Nurul Tsamarah Arifin (2024)	Quasi-experimental; 82 students (10th and 11th grade);	Both media effectively increased anemia

terhadap Pengetahuan Anemia pada Remaja Putri di SMA Islam Darussalam Kota Bekasi		comparison of TikTok vs leaflet	knowledge; no significant difference was found between TikTok and the leaflet.
The Influence of Nutrition Education Through TikTok on the Knowledge and Attitudes of Young Women in Efforts to Prevent Anemia in Medan City	Riski Sri Purwanti Pasaribu dkk. (2023)	Pseudo-experimental pretest–posttest with control group; adolescent girls in Medan	TikTok-based education proved to be more interactive and engaging than conventional methods, making it suitable for younger generations.
Pengaruh Edukasi Menggunakan Media TikTok Terhadap Pengetahuan dan Sikap Pencegahan Anemia pada Remaja Putri	Endang Triyanto (2023)	Pre–post test with control group; students of SMAN 1 Baturraden	TikTok is effective as an alternative educational medium compared to lectures alone, improving student engagement.

Results and Discussion

Effectiveness of TikTok Education in Improving Knowledge

The literature review findings indicate that the use of TikTok as a health education platform is effective in improving adolescent girls' understanding of anemia. TikTok, as a short-video–based platform with an interactive audiovisual format, is able to bridge the gap between formal health information and the learning preferences of today's youth. A study conducted by Riski Sri Purwanti Pasaribu et al. (2023) demonstrated that nutrition education delivered through TikTok had a significant effect on improving knowledge and attitudes among adolescent girls in Medan. Using a pseudo-experimental pretest–posttest design with a control group, the TikTok intervention group showed a much greater increase in knowledge scores

compared to the control group. The researchers concluded that TikTok's interactive, simple, and easily accessible characteristics make it superior to conventional methods such as lectures or brochures[11]. These findings align with a study by Endang Triyanto (2023), which examined students at SMAN 1 Baturraden. Using a pre–post test with a control group, the results showed a significant improvement in knowledge and preventive attitudes regarding anemia among the group receiving TikTok-based education. This research confirms that TikTok not only influences cognitive aspects but also helps shape positive attitudes towards anemia prevention. The study highlights that educational content packaged in short-video formats can stimulate memory retention and support preventive behaviors among adolescents[12].

Comparison of TikTok with Other Educational Media

In addition to being evaluated individually, TikTok's effectiveness was also compared with other educational media. Nurul Tsamarah Arifin (2024) conducted a quasi-experimental study involving 82 high school girls at SMA Islam Darussalam Kota Bekasi to compare TikTok videos with leaflets. The study revealed that both media effectively improved anemia-related knowledge; however, no significant difference was found between TikTok and leaflets. Nevertheless, the study noted that TikTok had an advantage in terms of acceptance, as adolescents tend to prefer digital and visually oriented information sources[13]. More comprehensive findings were presented by Kartika Pibriyanti et al. (2025). In a quasi-experimental study involving 105 adolescent girls, the researchers compared the effectiveness of Instagram Reels, TikTok, and leaflets. The results showed that both TikTok and Reels were more effective than leaflets in increasing knowledge of anemia prevention. Their advantage lies in the short-video format, which is easier to understand, more visually appealing, and more aligned with current adolescent learning styles that favor instant and interactive content. This study reinforces earlier findings that printed text–based media like leaflets are less appealing to the younger generation compared to digital video-based media[14].

Integration of TikTok with Other Media

The reviewed literature also revealed that educational effectiveness can be enhanced when TikTok is combined with other media. Bunga Sovani Firdawiyanti and Ratih Kurniasari (2024) conducted a quasi-experimental study in Karawang using TikTok and infographics. Although both media were effective in improving adolescent girls' knowledge about anemia, the combination of both yielded more optimal results. The integration of audiovisual media (TikTok) with static visual media (infographics) strengthened information retention, as health messages were conveyed not only through visual-auditory stimulation but also reinforced by

memorable graphical representations[15].

Accessibility and Acceptance of TikTok Among Adolescents

Beyond effectiveness, the success of TikTok as an educational medium is also supported by its high accessibility and strong acceptance among adolescents. Hana Tyas Murti Ningsih et al. (2024) examined students at SMP Negeri 1 Natar using a pre-experimental one-group pretest–posttest design. Their findings demonstrated a significant improvement in students' knowledge and attitudes after receiving TikTok-based anemia education. This study emphasizes that short videos with engaging presentation styles facilitate adolescents' understanding of topics that were previously perceived as difficult or uninteresting[16]. A similar study was conducted by Yunita Aprianti et al. (2024) at a senior high school in Jambi City. Using a one-group pretest–posttest design, the results showed that TikTok educational videos significantly increased adolescents' knowledge about anemia. This success is closely linked to the fact that TikTok is a highly popular platform among youth, allowing health messages to be more readily accepted as they align with the media adolescents use in their daily lives[17].

Effectiveness of Short Videos Based on Multimedia Learning Theory

The theoretical foundation underlying the effectiveness of short educational videos can be explained through the Cognitive Theory of Multimedia Learning (CTML) proposed by Richard E. Mayer. This theory outlines three core assumptions: dual-channel processing, limited capacity, and active processing. In the context of short videos, the integration of visual elements (images, animation, text) and auditory elements (narration) supports coordinated processing through both channels, thereby facilitating deeper learning[18]. Studies have shown that applying CTML principles in educational video design produces positive learning outcomes. Due to their brief duration, short videos help reduce excessive cognitive load and maintain users' attention. This aligns with findings that learning-oriented videos particularly segmented and learner-controlled videos are more effective when cognitive load is optimally managed. Thus, based on CTML and empirical evidence, short videos theoretically support the formation of stronger mental models, optimal visual verbal integration, and better information retention compared to traditional educational materials[18].

Strengths and Limitations of TikTok as an Educational Medium

A review of the literature indicates several strengths that make TikTok a superior educational platform compared to conventional methods or other media.

1. TikTok effectively improves knowledge and attitudes among adolescent girls

regarding anemia. Studies by Pasaribu et al. (2023) and Triyanto (2023) show that TikTok-based education is more interactive and able to stimulate memory retention and preventive attitudes compared to conventional methods such as lectures. This is attributed to its short-video format and visually appealing presentation, which are easier for students to understand and remember[11,12].

2. TikTok is highly accessible and well-accepted by adolescents. Research by Ningsih et al. (2024) and Aprianti et al. (2024) demonstrates that junior and senior high school girls who received TikTok-based education experienced significant improvements in knowledge and attitudes. This is because TikTok is already a part of adolescents' daily activities, making health messages feel more natural and less forced[16,17].
3. TikTok is comparable or even superior to other educational media. Arifin (2024) found that both TikTok and leaflets were effective, although leaflets represent a more traditional medium. Meanwhile, Pibriyanti et al. (2025) reported that TikTok and Instagram Reels were more effective than leaflets, as short-video formats fit better with the learning preferences of modern adolescents[13,14].
4. Combining TikTok with other media enhances information retention. Firdawiyanti and Kurniasari (2024) discovered that integrating TikTok with infographics yielded more optimal outcomes compared to using each medium alone. The combination of audiovisual and static visual media strengthens comprehension because messages are processed through multiple sensory channels[15].

Despite its strengths, TikTok also presents certain limitations when used as an educational medium. First, the short duration of TikTok videos may lead to oversimplification of health information, preventing in-depth explanation of complex topics. This may result in superficial understanding among adolescents[11,12]. Second, the effectiveness of TikTok-based education depends heavily on content quality. Videos that are unengaging, insufficiently interactive, or overloaded with information can reduce educational impact[14]. Therefore, creativity and adherence to good health communication principles are crucial when designing TikTok content.

Potential Bias in Studies on the Effectiveness of TikTok Education

In this study, it is important to acknowledge that various potential sources of bias may affect the validity of video-based intervention outcomes. First, differences in research designs among intervention studies serve as a major source of bias. Some studies use randomized controlled trials, while many still employ quasi-experimental or pre–post designs without adequate control groups, creating risks of selection bias and confounding. For example, a scoping

review noted that intervention studies were often not initially designed to reduce risks of bias in both planning and implementation stages[19]. Second, the duration and intensity of interventions vary greatly between studies. Some interventions were implemented over a very short period (e.g., less than two weeks), whereas others lasted eight weeks or longer. Meta-analytic studies indicate that longer intervention duration tends to produce greater effects, although the results still show high heterogeneity. This variation presents challenges for generalizing findings: very short durations may be insufficient to generate lasting change, while longer interventions may be influenced by external factors such as participant motivation or drop-out[19].

Third, the measurement tools for knowledge or outcomes also differ across studies in terms of type and validity. Some studies use self-reported questionnaires, while others rely on objective measurements or external observation. For example, meta-reviews in the field of education indicate that intervention studies frequently experience risks of measurement bias and heterogeneity of instruments. Differences in measurement tools can affect the reliability and interpretation of results, and therefore should be acknowledged as study limitations[20].

Fourth, external factors such as participant motivation, learning context, access to technology or internet, and socio-cultural background may moderate intervention outcomes but are often insufficiently controlled or reported. This is particularly important in studies using digital media such as short-form videos, where usage conditions vary widely among participants[20].

Conclusion

Education through the social media platform TikTok has been shown to be effective in increasing knowledge and preventive attitudes regarding anemia among adolescent girls. All reviewed studies reported significant improvements after the intervention, both in cognitive and behavioral aspects, because TikTok is able to deliver health information through short, engaging, visual, and interactive videos that align with the characteristics of the digital generation. The integration of TikTok with other media, such as infographics, can further strengthen comprehension and information retention. Nevertheless, the effectiveness of education strongly depends on the quality and design of the content based on health communication principles. Therefore, educational institutions and health professionals are recommended to utilize TikTok as a planned and measurable medium for adolescent health education to ensure that health messages are delivered effectively, attractively, and sustainably.

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