Original Article

e-ISSN: 2775-5037
p-ISSN: 2614-3917

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The Role of Social Media in Stunting Prevention Education among Mothers of Toddlers: A Narrative Review

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Abstrak:

Stunting continues to be a significant public health concern across many developing nations, including Indonesia, and is closely associated with inadequate maternal knowledge and suboptimal infant feeding practices. The rapid expansion of digital technology has created opportunities to utilize social media as a medium for health education. This study aimed to narratively review the utilization of social media as an educational instrument for stunting prevention. A narrative review design was applied by searching articles in Science Direct and PubMed published between 2020 and 2025. Eligible studies were primary research articles in English or Indonesian that examined social media–based education related to stunting among mothers, adolescent girls, parents, or the community. The selected studies were analysed descriptively and synthesized narratively. The findings showed that most studies employed quasi-experimental and pretest–posttest designs. WhatsApp was the most frequently used platform, followed by other social media, Instagram and TikTok. Overall, social media based interventions consistently improved knowledge, in several studies, also enhanced attitudes and preventive practices related to stunting. Messaging platforms were particularly useful for sustained education, while short video platforms demonstrated strong potential for increasing engagement among younger audiences. Supporting factors included high accessibility, time flexibility, and attractive visual content, whereas barriers involved variations in digital literacy, limited internet access, and heterogeneity of study designs. In conclusion, social media is promising and effective for stunting prevention education and should be integrated into maternal and child health programs to strengthen the reach and continuity of nutrition education.

Submited : 28 February 2026
Revised : 04 March 2026
Acceptance : 09 March 2026
Publish Online : 10 March 2026

Keywords: Stunting, Social Media, Health Education, Knowledge

Introduction

Stunting continues to be a significant public health concern across many developing nations, including Indonesia, and continues to pose serious public health challenges. It is defined as impaired linear growth in children caused by prolonged and cumulative malnutrition, particularly during the crucial period of the first 1,000 days of life, beginning from conception until the child reaches two years old. During this sensitive period, inadequate intake of macro- and micronutrients, recurrent infections, poor maternal nutritional status, suboptimal infant feeding practices, and inadequate sanitation may interact and disrupt optimal growth and development (Arief Yuni Sayantani Yunita, 2025). The consequences of stunting are multidimensional and long-range time. Within a short period, stunted children tend to experience delayed motor development, weakened immune function, and increased susceptibility to infectious diseases. Over the long term, stunting is associated with impaired cognitive development, lower educational attainment, reduced work capacity, and decreased economic productivity in adulthood. Therefore, stunting prevention has become a strategic priority in public health programs, requiring comprehensive and multisectoral interventions targeting maternal nutrition, appropriate infant and young child nutrition practices, infection prevention and control, and strengthened water, sanitation, and hygiene (WASH) efforts (Helmyati, 2020; Nirmalasari, 2020).

In 2022, about 148,1 million children younger than five years experienced stunting globally, predominantly in low- and middle-income nations. National data from the 2023 Indonesian Health Survey indicate that the prevalence of stunting in Indonesia remains high at roughly 21,5%, indicating that about one in five children under five experiences impaired linear growth (Arief Yuni Sufyantiand Yunita, 2025). Although the trend shows a gradual decline compared with previous years, the current prevalence still exceeds the national reduction targets. This situation highlights the need for more effective, sustained, and multisectoral prevention strategies. Reducing stunting more effectively and enhancing child health outcomes in Indonesia depend on strengthening maternal–child nutrition programs, optimizing infant and young child feeding practices, increasing access to quality healthcare, and intensifying water, sanitation, and hygiene (WASH) measures (Suparji et al., 2024).

Efforts to prevent stunting should not rely solely on specific nutrition interventions but must also incorporate educational approaches aimed at improving community knowledge and behavior, particularly among mothers and women of reproductive age. Nutrition education is a key component of health promotion that seeks to influence individual attitudes and practices toward behaviors that support optimal health and child growth. By strengthening caregivers' understanding of appropriate maternal nutrition, exclusive breastfeeding, complementary feeding, and hygiene practices, education can contribute substantially to address the underlying determinants of stunting (Rusdi D et al., 2024). However, conventional educational methods, such as face-to-face counseling and community lectures, continue to face several limitations. These approaches often have restricted coverage, depend heavily on the availability of health personnel, and may provide only one time exposure to information, which can reduce message retention and behavior change. In addition, scheduling constraints, geographical barriers, and varying levels of participant engagement may further limit their effectiveness. Therefore, more innovative, scalable, and continuous educational strategies are needed to enhance the reach and impact of stunting prevention programs (Ernawati, 2022; Rusdin et al., 2023).

With the rapid advancement of digital technology, the application of social media as a health education tool has risen considerably. Social media platforms enable health information to be disseminated quickly, widely, and interactively to diverse segments of the population. This digital environment offers opportunities for repeated exposure, user engagement, and peer-to-peer information sharing, which can strengthen the effectiveness of health promotion efforts, including stunting prevention. Several studies have reported that digital-based educational interventions, particularly those delivered through social media, are effective in improving adolescents' understanding of stunting prevention (Lestari et al., 2025; Nurhasanah Pratiwi et al., 2023). Digital or social media such as TikTok, Instagram, Twitter, YouTube, and Facebook have been shown to significantly increase users' knowledge scores, with some studies reporting improvements of up to 36,75% through TikTok-based education. Moreover, the use of TikTok and WhatsApp as educational media has been demonstrated to positively influence knowledge, perceptions, and attitudes related to stunting among adolescent girls, demonstrating the capacity of social media to serve as an innovative platform for public health education (Afifi et al., 2025; Irma Sahara et al., 2023; Niswa et al., 2025).

Despite the considerable potential of social media in health education, existing studies remain scattered across different disciplines, platforms, and target populations. Variations in research designs, types of interventions, measured outcomes, and participant profiles limit the ability to establish definitive conclusions regarding the overall effectiveness of social media-based education for stunting prevention. In addition, variations in content quality, duration of exposure, and evaluation methods further contribute to inconsistent findings. These conditions indicate the need for a comprehensive and structured synthesis of the literature to clarify the magnitude of impact, identify the most effective platforms and approaches, and highlight existing research gaps that require further investigation. Based on this background, this article directs to conduct a narrative review for utilization of social media as an educational medium in stunting prevention by critically examining recent empirical evidence. This review seeks to map the types of platforms used, the characteristics of target audiences, the forms of educational interventions implemented, and the reported outcomes related to cognitive and attitudinal aspects, and preventive behaviors. The study's findings are projected to offer an evidence-informed foundation for developing more strategic and scalable digital health promotion programs. Furthermore, the review may guide health professionals, educators, and policymakers in optimizing social media–based interventions to enhance community engagement, improve maternal and adolescent awareness, and ultimately contribute to the acceleration of stunting reduction efforts.

Methods

This research adopted a narrative review design to assess the application of social media as an educational tool in stunting prevention. This approach was selected to obtain a comprehensive overview of recent research findings regarding the use of various social media platforms in stunting education interventions.

Literature Search Strategy

The literature search was conducted systematically across several electronic databases, Science Direct and PubMed, to identify relevant articles. The search process was carried out in January – February 2026, with a publication year range of 2020–2025 to ensure that the evidence reflects the most recent scientific findings. The keywords used were a combination of English and Indonesian terms applied with

Boolean operators (AND, OR), including (“social media” OR “digital media” OR “WhatsApp” OR “Instagram” OR "Facebook" OR “Tiktok”) AND ("stunting prevention" OR "stunting education" OR “nutrition education”) AND (“mother” OR “caregiver” OR “parent”). For Indonesian-language searches, the following keywords were used (media sosial OR WhatsApp OR Instagram OR Tiktok) AND (edukasi stunting OR pencegahan stunting).

Inclusion Criteria

1. Primary studies articles
2. Articles published between 2020 and 2025
3. Full text articles
4. Indonesian or English language
5. Discussed the use of social media as an educational medium related to stunting
6. Involved target populations such as mothers, adolescent girls, parents, or the general community

Exclusion Criteria

1. Review articles, editorials, or commentaries
2. Articles not focused on stunting
3. Duplicate articles
4. Articles with incomplete data

Article Selection Process

All articles obtained through the literature search were collected, and duplicates were removed. Screening of titles and abstracts was performed based on the predetermined inclusion and exclusion criteria. Those meeting the criteria were subsequently assessed in full to determine their final suitability for the review. The selection process was carried out in stages until relevant articles were obtained for analysis in this narrative review.

Data Extraction and Synthesis

Data from the included studies were extracted into a synthesis table capturing the authorship and year, country of the study, study methodology, social media platform employed, participant details, and principal outcomes. The study results were then analyzed descriptively and synthesized narratively based on emerging key themes, such as the types of social media platforms, the effectiveness of educational interventions, and the facilitating and inhibiting factors in implementation.

Results

Study Selection Results

In total, 187 records were collected through a comprehensive search across three electronic databases. Specifically, 91 records were obtained from PubMed and 96 from Science Direct. After removing duplicate articles, the remaining articles were reviewed through their titles and abstracts for eligibility. During the initial screening, studies that were clearly not related to the role of social media in stunting prevention education or that did not involve mothers of under-five children were excluded. Articles considered potentially relevant were then subjected to full-text review to determine their eligibility for inclusion. Studies were excluded at this stage if they did not focus on social media based educational interventions, did not report outcomes related to stunting prevention,

used inappropriate study designs (such as reviews or conference abstracts), provided insufficient data, or involved overlapping populations. In the end, 11 studies fulfilled all the inclusion criteria and were incorporated into this narrative review. The process of study selection is presented in the PRISMA flow diagram (Figure 1).

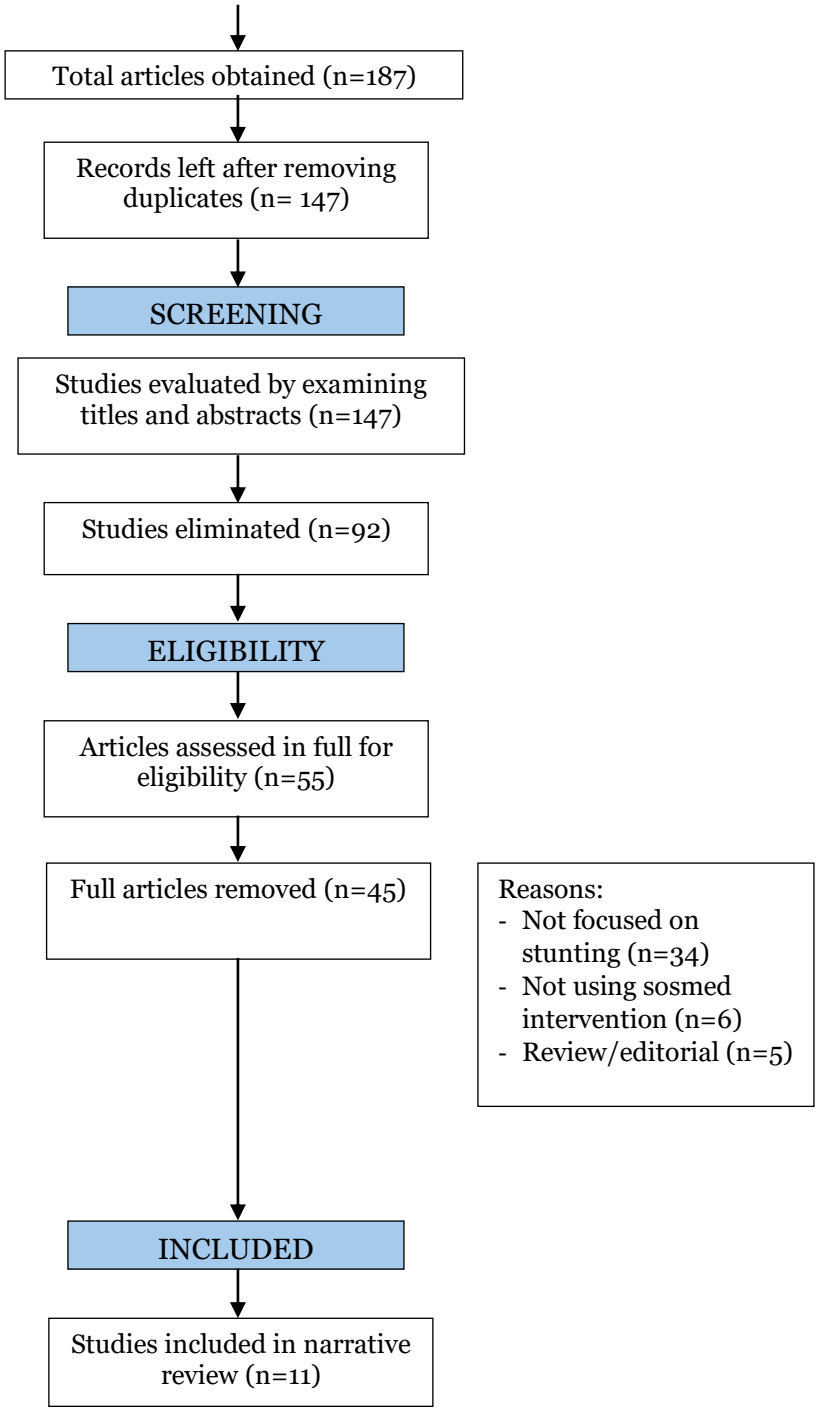

Figure 1. PRISMA Flow Diagram of Study Selection

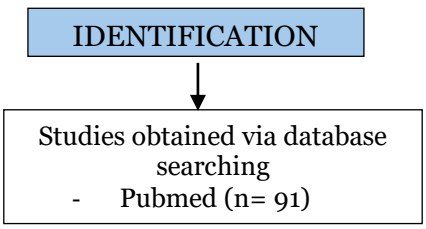

Table 1. Details of the Selected Studies

No.	Author (Year)	Country	Study Design	Media	Sample	Outcome	Finding
1.	Niswa, Nurun, et al. (2025)	Indonesia	Quasy experimental	TikTok and WhatsApp	Adolescent girls	Knowledge, perceptions, and attitude	TikTok proved to be more influential
2.	Lestari, Sri, et al. (2025)	Indonesia	Quantitative study	Social media in general	Mothers with infants and toddlers	Awareness for stunting prevention	Significant correlation
3.	Pratiwi, Nurhasanah, et al. (2023)	Indonesia	Case control	Social media in general	Mothers with toddlers	Attitude	Significant correlation
4.	Sahara, Novida I., et al. (2023)	Indonesia	Descriptive study	Social media in general	Caders	Implementationof social media	Instagram, Facebook and WhatsApp easy for public access
5.	Faizi, Muhammad, et al. (2022)	Indonesia	Pre-posttest study design	Zoom meeting	Mothers with toddlers	Knowledge	Significant influence
6.	Brilianti, et al. (2022)	Indonesia	Pre-posttest study design	WhatsApp	Mothers with toddlers	Knowledge	Significantly increased
7.	Agustini, et al. (2024)	Indonesia	Pre-posttest study design	WhatsApp	Caders	Knowledge and attitude	Significantly increased
8.	Savira, et al. (2024)	Indonesia	Qualitative study	Instagram	Contents	Awarness	Educative
9.	Sultana et al. (2025)	Bangladesh	RCT	WhatsApp	Mothers with toddlers	Knowledge and practice	Significantly increase

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10.	Padunggala, et al. (2025)	Indonesia	Pre-posttest study design	WhatsApp	Mothers with stunted toddlers	Knowlede and literacy	Significant influence
11.	Erfina, et al. (2025)	Indonesia	Mixed methods	Mobile application, WhatsApp, and direct consultation	Mothers with toddlers	Knowledge	Significant improvements in knowledge

Study Selection Results

Many of the included studies applied pretest–posttest study designs. Mothers of children under five represented the most frequently studied target group, followed by The Integrated Health Post (Posyandu) cadres and adolescent girls. The interventions were delivered through various social media platforms, including WhatsApp, Instagram, TikTok, and other mobile application/digital media. The study selection results are described in Table 1.

Main Findigs

The synthesis of the reviewed studies indicates that social media–based educational interventions consistently contribute to significant improvements in participants knowledge regarding stunting prevention. Through various target groups, exposure to structured digital education delivered through messaging groups, visual posts, or short videos was associated with measurable gains in understanding of key topics such as maternal nutrition, infant feeding practices, and early prevention strategies. Beyond knowledge outcomes, several studies also reported positive shifts in attitudes and preventive practices, suggesting that social media interventions may support not only cognitive change but also behavioral readiness. Among the platforms examined, WhatsApp was the most utilized, primarily through moderated educational groups and the regular dissemination of digital learning materials, reminders, and discussion prompts. In contrast, short form video platforms such as TikTok and Instagram demonstrated particularly strong potential for increasing user engagement, attention, and message retention, highlighting their value as complementary tools in digital health promotion for stunting prevention.

Discussion

Effectiveness of Social Media in Stunting Prevention Education

According to this review, social media is an effective strategy for improving knowledge, fostering positive attitudes, and promoting preventive practices related to stunting. The consistent gains reported across studies support the growing body of

recent digital health evidence showing that mobile health (mHealth) and social media based interventions can substantially expand the reach of nutrition and maternal child health education, particularly among populations that are difficult to reach through conventional face to face approaches (Saleem & Jan, 2025; WHO, 2021). One of the major strengths of social media lies in its ability to deliver information rapidly, flexibly, and with repeated exposure. Educational content can be accessed anytime and anywhere, increasing the likelihood of sustained information uptake. In addition, interactive features such as comment sections, direct messaging, and group discussions facilitate two-way communication between health professionals and target audiences. This interactivity plays an important role in clarifying misconceptions, strengthening user engagement, and supporting the process of behavior change. Recent digital health literature emphasizes that repeated messaging combined with user interaction significantly enhances health literacy and adoption of recommended practices (Erfina et al., 2025; Li et al., 2024a).

Furthermore, social media-based education is considered relatively cost-effective and highly scalable, making it a promising approach for large-scale public health promotion, including stunting prevention programs. However, its effectiveness may still depend on several factors, such as the quality and cultural appropriateness of content, the digital literacy of the target population, and the consistency of facilitation by health workers. Therefore, integrating social media into structured behavior change communication strategies is essential to maximize the impact of digital interventions in maternal and child health (Holst et al., 2021; Li et al., 2024b).

Dominance of WhatsApp Use

WhatsApp emerged as the most frequently utilized platform across the reviewed studies. This pattern can largely be explained by its extensive penetration among communities and its relatively simple, user-friendly interface, which makes it accessible even for populations with limited digital literacy. The widespread adoption of WhatsApp has encouraged health educators to leverage the platform as a practical channel for delivering maternal and child health information. Educational interventions delivered through WhatsApp groups enable structured and gradual dissemination of materials, often combined with reminders, multimedia content, and interactive discussion. Evidence indicates that WhatsApp based health education can significantly improve participants' knowledge and self-management abilities. For example, a randomized controlled trial reported that the delivery of health education through WhatsApp messages led to significant improvements in mothers' knowledge, beliefs, and practices regarding child fever management ($p < 0{,}001$) (Altay et al., 2026a). Similarly, a quasi-experimental study in Indonesia found that complementary feeding education provided through WhatsApp groups significantly increased adolescent mothers' knowledge ($p = 0{,}017$). These findings support the platform's effectiveness as a low-cost digital health promotion tool (Altay et al., 2026b; Muthiah et al., 2022).

Despite these advantages, the success of WhatsApp-based education is highly dependent on participant engagement and group dynamics. Interactive features such as group discussions can strengthen two-way communication between health workers and participants, but low response rates or passive group members may reduce the intervention's impact. Previous research has emphasized that while WhatsApp facilitates easy information sharing and strengthens links between health services

and users, sustained participation remains a critical determinant of program effectiveness (Anaje et al., 2023).

Potential of Visual Media: Instagram and TikTok

Visual oriented platforms such as Instagram and TikTok are increasingly recognized as powerful tools for health promotion. Their strength lies in delivering short videos, animations, and infographic-style content that can simplify complex health messages and capture users' attention quickly. Recent digital health research shows that audiovisual social media interventions tend to generate higher engagement and better knowledge uptake than text-based education, particularly among adolescents and young adults (Burah et al., 2024; Sutherland et al., 2021). Short-form video content is especially effective for adolescent girls because it aligns with their media consumption patterns and preference for visually engaging information. Visual storytelling also improves comprehension through combined visual and verbal processing. Evidence from TikTok health communication research indicates that brief, visually appealing videos can significantly enhance viewer interaction and understanding of public health messages (Moeller et al., 2021).

These findings imply that selecting an educational platform should be tailored to the demographic profile of the target audience. Interventions targeting adolescents may achieve greater impact through visually driven platforms like Instagram and TikTok, whereas programs aimed at mothers or caregivers may still benefit from messaging platforms such as WhatsApp. Therefore, aligning platform choice with audience characteristics is crucial to optimize the effectiveness of digital stunting prevention education.

Supporting and Inhibiting Factors

The success of social media-based education is influenced by several facilitating factors, particularly its high accessibility, temporal flexibility, and the capacity to deliver visually engaging content. Digital platforms allow health messages to be accessed repeatedly and asynchronously, which strengthens knowledge retention and facilitates continuous learning among users. Evidence from digital health implementation studies indicates that the broad availability of mobile technology and the adaptability of eHealth solutions significantly enhance user engagement and scalability of health interventions (Støme et al., 2021). Despite these advantages, several barriers may limit the optimal impact of social media driven stunting education. Variability in digital literacy remains a major challenge, as users with limited technological skills may struggle to engage fully with online interventions. In addition, inadequate technical infrastructure and unequal internet access particularly in underserved or rural areas can restrict program reach and sustainability. Previous reviews of mobile health adoption have also highlighted issues such as workflow incompatibility, limited technical support, and user preferences for face-to-face interaction as important constraints to digital health implementation. These findings suggest that future educational strategies should combine attractive digital content with efforts to improve digital literacy, infrastructure readiness, and contextual adaptation to maximize the effectiveness of social media–based stunting prevention programs (Alsahli et al., 2023; Widodo et al., 2024).

Impact on Maternal and Child Health Practice and Health Promotion in Relation to

Stunting

The results of this review underscore the strategic role of social media in strengthening stunting prevention efforts within maternal and child health (MCH) programs. Given that stunting is strongly associated with maternal knowledge, infant feeding behaviors, and nutrition during the first 1,000 days of life, the use of digital platforms offers a valuable opportunity to reinforce preventive practices among mothers and caregivers. Embedding social media-based education into routine MCH services such as antenatal care, postnatal follow up, and community outreach can help maintain continuous exposure to essential messages on maternal nutrition, exclusive breastfeeding, appropriate complementary feeding, and regular growth monitoring. According to the World Health Organization, improving caregiver knowledge and practices remains a key pillar in reducing stunting (WHO, 2021). From a broader health promotion standpoint, social media enables more rapid, scalable, and audience-specific communication, particularly for high-risk groups such as pregnant women, mothers of young children, and adolescent girls as prospective mothers. When content is visually appealing and culturally tailored, digital education can enhance health literacy and support sustained behavior change in maternal and child nutrition (Ayu Rahmadani et al., 2025; Nurhayati et al., 2020).

Nevertheless, achieving measurable reductions in stunting prevalence requires that social media initiatives be implemented alongside holistic nutrition-specific and nutrition-sensitive programs, including food security improvements, water and sanitation programs, and equitable access to health care. Efforts to enhance digital literacy, expand internet coverage, and strengthen the digital competencies of health workers are also essential to ensure that social media–based education contributes optimally to national stunting reduction targets.

Conclusion

This review indicates that social media is an effective and promising medium for delivering stunting prevention education, with consistent improvements observed in knowledge and, in some cases, attitudes and practices. WhatsApp remains the most widely used platform due to its accessibility, while visually oriented platforms such as Instagram and TikTok show strong potential for engaging younger audiences. However, the success of social media interventions depends on user engagement, digital literacy, and internet access. Therefore, social media should be integrated with routine maternal and child health services and broader nutrition programs to maximize its contribution to sustainable stunting reduction.

Suggestion

This review shows that social media can serve as a practical and effective tool for stunting prevention education, especially in enhancing knowledge and awareness among mothers and adolescents. Incorporating social media into maternal and child health programs may improve the continuity and coverage of nutritional education. Future efforts should emphasize the development of appropriate audience content and equitable digital access to optimize the effectiveness of stunting prevention initiatives.

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