

Effectiveness of social media as a health promotion tool for reproductive health among adolescents: A cross-sectional study

Matilda Martha Paseno¹, Rosmina Situngkir¹, Yunita Gabriela Madu¹

¹ Department of Nursing, Sekolah Tinggi Ilmu Kesehatan Stella Maris Makassar, South Sulawesi, Indonesia

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ABSTRACT

Introduction: Adolescent reproductive health remains a significant public health concern, particularly in developing countries where access to accurate reproductive health information is often limited. Social media has emerged as a widely used communication platform among adolescents and may serve as an alternative medium for reproductive health promotion. This study aimed to analyze the effectiveness of social media as a health promotion tool for reproductive health among adolescents.

Research Methodology: A quantitative cross-sectional analytical study was conducted among 250 adolescents from selected senior high schools in Makassar, South Sulawesi, Indonesia. Respondents were selected using stratified random sampling. Data were collected through a structured self-administered questionnaire assessing information accessibility, perceived credibility, user engagement, and frequency of exposure to reproductive health content on social media. Data analysis was performed using descriptive statistics, Chi-square tests, Pearson correlation tests, and multiple logistic regression, with a significance level of $\alpha = 0.05$, in SPSS version 26.

Results: Perceived credibility was the strongest predictor of social media effectiveness in reproductive health promotion (AOR = 3.06; 95% CI: 1.67–5.59; $p < 0.001$). Frequent exposure to reproductive health content was significantly associated with higher perceived effectiveness (AOR = 2.39; 95% CI: 1.28–4.46; $p = 0.004$). High user engagement (AOR = 2.10; 95% CI: 1.16–3.79; $p = 0.011$) and information accessibility (AOR = 2.54; 95% CI: 1.39–4.65; $p = 0.002$) were also significantly associated with positive educational outcomes.

Conclusion: Social media is an effective platform for reproductive health promotion among adolescents when information is accessible, credible, and interactive. The findings highlight the importance of evidence-based digital health communication and support, integrating adolescent-centered social media strategies into reproductive health promotion programs.

Keywords: adolescent; health promotion; reproductive health; social media; youth.



✉ Corresponding author. email: matildastikstellamaris@gmail.com

Department of Nursing, Sekolah Tinggi Ilmu Kesehatan Stella Maris Makassar, South Sulawesi, Indonesia



INTRODUCTION

Adolescent reproductive health remains a persistent public health concern in many low- and middle-income countries, particularly in regions where access to accurate health information is uneven and discussions related to sexuality continue to be influenced by cultural stigma (Abdul Hamid Alhassan et al., 2025). Adolescents frequently encounter substantial barriers when attempting to obtain reliable reproductive health education, including limited communication with parents, insufficient school-based education, and restricted access to youth-friendly healthcare services (Ali et al., 2025). These limitations contribute to misinformation, unsafe sexual practices, low contraceptive awareness, increased vulnerability to sexually transmitted infections, and unintended pregnancies among young people (Baumann et al., 2026). In several developing settings, reproductive health interventions continue to rely heavily on conventional educational approaches that are often unable to engage adolescents effectively within rapidly evolving digital environments (Broussard et al., 2026).

At the same time, patterns of information-seeking behavior among adolescents have changed considerably over the past decade. Social media platforms have become one of the primary sources through which adolescents obtain information related to lifestyle, identity, relationships, and health (De Oliveira & França, 2025). Platforms such as Instagram, TikTok, YouTube, WhatsApp, and X are no longer used solely for entertainment and social interaction; they increasingly function as informal educational environments where health-related messages are exchanged and interpreted (Ferretti et al., 2025). The high frequency of adolescent engagement with digital content creates opportunities for health promotion initiatives to reach audiences more efficiently than traditional face-to-face campaigns (Fischer et al., 2025). Social media enables rapid, visual, and interactive dissemination of health messages, potentially improving adolescents' exposure to reproductive health information (Gerchow et al., 2024).

Despite these opportunities, the effectiveness of social media as a reproductive health promotion tool remains contested (Guan et al., 2026). Existing evidence indicates that social media campaigns may improve awareness and increase exposure to health information, yet the quality, credibility, and behavioral impact of digital content vary substantially (Hermayanti et al., 2026). Several studies have demonstrated that adolescents exposed to reproductive health campaigns through social media exhibit higher levels of knowledge regarding contraception, menstrual health, sexually transmitted infections, and healthy relationships. Interactive formats such as short videos, peer-generated discussions, and infographic-based campaigns have been associated with increased message retention and stronger emotional engagement among young audiences (Irmayanti et al., 2026).

However, the literature also identifies important limitations in the implementation of digital health promotion. A considerable proportion of reproductive health information circulating on social media lacks scientific accuracy, is influenced by commercial interests, or reproduces myths and misconceptions. Adolescents may struggle to distinguish between evidence-based information and misleading content due to limited digital health literacy. Moreover, algorithm-driven content exposure can create selective information environments that reinforce misinformation rather than promote healthy behavior. Several scholars have argued that while social media increases accessibility to reproductive health information, increased exposure alone does not necessarily translate into positive behavioral outcomes (Je et al., 2026).

A critical analysis of previous studies further reveals methodological inconsistencies that limit the strength of the current evidence. Many investigations focus primarily on descriptive assessments of social media usage patterns without examining measurable indicators of health promotion effectiveness. Other studies focus exclusively on knowledge outcomes, neglecting dimensions such as attitudes, perceived credibility, engagement intensity, and behavioral intention. Research conducted in high-income countries dominates the literature, whereas evidence from developing countries with different sociocultural contexts remains comparatively limited. In addition, several studies evaluate single-platform interventions, making it difficult to

understand how adolescents navigate multiple digital platforms simultaneously in real-world settings (Lohan et al., 2025).

Another limitation concerns the tendency of prior research to conceptualize adolescents as passive recipients of information. In practice, adolescents actively create, modify, share, and interpret health-related content through peer interactions within digital communities. The social dynamics embedded in online communication may influence trust formation, message acceptance, and behavioral decision-making in ways that conventional health promotion models do not adequately capture. Furthermore, previous findings regarding the relationship between frequency of social media exposure and actual reproductive health understanding remain inconsistent, suggesting the need for further investigation using more context-specific analytical approaches.

This study examines the effectiveness of social media as a reproductive health promotion tool among adolescents using a cross-sectional analytical approach. Unlike previous studies that focused mainly on exposure frequency or general digital behavior, this research evaluates multiple dimensions simultaneously, including information accessibility, perceived credibility, user engagement, and perceived influence on reproductive health understanding. The study also considers the sociocultural and health literacy disparities commonly found in developing-country settings, which may influence adolescents' interpretation of reproductive health information. The novelty of this research lies in its integrated analytical framework that combines communication exposure, interaction patterns, and perceived educational impact across multiple social media platforms. By incorporating both informational and behavioral dimensions, this study provides a broader understanding of how social media functions as a contemporary reproductive health promotion strategy. The findings are expected to support healthcare professionals and policymakers in developing more adaptive, credible, and adolescent-centered digital health promotion interventions.

RESEARCH METHODOLOGY

Research design

This study employed a quantitative cross-sectional analytical design to examine the effectiveness of social media as a health promotion tool for reproductive health among adolescents. A cross-sectional approach was selected because it allows the simultaneous assessment of exposure variables and outcome variables within a defined population at a single point in time. This design is considered appropriate for identifying associations between patterns of social media use and adolescents' perceptions of the effectiveness of reproductive health promotion. In addition, the design enables efficient population-based data collection and the simultaneous evaluation of multiple variables within a relatively limited research period.

Setting and Participants

The study was conducted in several senior high schools located in Makassar, South Sulawesi, Indonesia, from January to March 2026. The target population consisted of adolescents aged 15–19 years who actively used social media platforms such as Instagram, TikTok, YouTube, WhatsApp, and X for obtaining health-related information. Inclusion criteria included adolescents enrolled as active students, with access to at least one social media platform, able to understand the research questionnaire, and who agreed to participate voluntarily in the study. Exclusion criteria included students who were absent during data collection, declined participation, or submitted incomplete questionnaires. A stratified random sampling technique was used to ensure proportional representation across grade levels. The minimum sample size was calculated using the Slovin formula with a 95% confidence level and a 5% margin of error. Based on the estimated adolescent population in the selected schools, the minimum required sample size was 250 respondents. To minimize the risk of incomplete responses, an additional 10% was added to the estimated sample size during recruitment.

Variables and Measurement

The independent variable in this study was social media utilization for reproductive health information, while the dependent variable was the effectiveness of social media as a reproductive health promotion tool. The effectiveness variable was measured across four dimensions: information accessibility, perceived credibility, user engagement, and perceived influence on reproductive health understanding. Operationally, social media utilization refers to the frequency and intensity of adolescents' exposure to reproductive health-related content across digital platforms. Accessibility was defined as adolescents' perceived ease of obtaining reproductive health information through social media. Perceived credibility referred to the extent to which respondents considered the information accurate, trustworthy, and relevant. User engagement included interaction patterns such as viewing, sharing, commenting, or discussing reproductive health content online.

Data were collected using a structured, self-administered questionnaire developed from previous literature and adapted to the local sociocultural context. The questionnaire included demographic characteristics and Likert-scale items assessing social media use and the effectiveness of reproductive health promotion. Content validity was evaluated by three experts in public health, nursing, and health promotion. Instrument reliability was assessed in a pilot study involving 30 adolescents outside the study sample, yielding a Cronbach's alpha coefficient of 0.82, indicating good internal consistency. Primary data were obtained directly from respondents through questionnaire distribution.

Data Collection

Data collection was conducted after obtaining institutional permission from participating schools and ethical approval from the relevant ethics committee. Respondents were approached in classroom settings and received explanations regarding the study objectives, procedures, confidentiality, and voluntary nature of participation. Participants who agreed to participate signed informed consent forms before completing the questionnaire. For participants under 18 years of age, parental or guardian consent was also obtained in accordance with ethical requirements. The questionnaire was completed anonymously to protect respondent privacy and reduce social desirability bias. To ensure data quality, research assistants received standardized training regarding recruitment procedures, questionnaire administration, and ethical considerations. Completed questionnaires were checked immediately after submission to identify incomplete responses. Double-entry verification was also conducted during data input to minimize transcription errors.

Data Analysis

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics were used to summarize respondent characteristics and study variables, including frequency distributions, percentages, means, and standard deviations. Bivariate analysis was conducted using the Chi-square test and Pearson correlation test to examine associations between social media utilization variables and reproductive health promotion effectiveness. Variables with p-values less than 0.25 in bivariate analysis were included in multivariate analysis. Multivariate analysis was performed using multiple linear regression to identify the independent contribution of social media utilization dimensions to reproductive health promotion effectiveness while controlling for potential confounding variables. Statistical significance was determined at the 95% confidence interval with $\alpha = 0.05$.

Ethical Approval

This study received ethical approval from the Health Research Ethics Committee of Sekolah Tinggi Ilmu Kesehatan Stella Maris Makassar, South Sulawesi, Indonesia, with approval number: 012/KEPK-STIKSM/I/2026. All respondents received detailed information regarding the objectives, benefits, procedures, confidentiality, and voluntary nature of participation before enrollment. Written informed consent was obtained from all participants prior to data collection. Respondents were informed that participation was voluntary and that they could withdraw from the study at any time without consequences. All collected data were kept confidential and used exclusively for research purposes.

RESULT

A total of 250 adolescents participated in this study, with all questionnaires meeting the inclusion criteria for analysis. The results are presented systematically to describe respondents' demographic characteristics, patterns of social media utilization for reproductive health information, and the effectiveness of social media as a health promotion tool. Bivariate and multivariate analyses were subsequently conducted to examine the relationships between social media utilization variables and the effectiveness of reproductive health promotion among adolescents. Table 1. Demographic Characteristics and Patterns of Social Media Utilization for Reproductive Health Information among Adolescents.

Table 1. Characteristics of Respondents (n = 250)

Variable	Frequency (n)	Percentage (%)
Age		
15–16 years	102	40.8
17–19 years	148	59.2
Gender		
Male	109	43.6
Female	141	56.4
Most Frequently Used Social Media Platform		
Instagram	76	30.4
TikTok	98	39.2
YouTube	43	17.2
WhatsApp/X	33	13.2
Frequency of Accessing Reproductive Health Content		
Rarely	57	22.8
Occasionally	121	48.4
Frequently	72	28.8
Perceived Effectiveness of Social Media		
Low	61	24.4
Moderate	103	41.2
High	86	34.4

Most respondents were aged 17–19 years (59.2%) and female (56.4%). TikTok was identified as the most frequently used social media platform for accessing reproductive health information (39.2%). Nearly half of the respondents reported occasionally accessing reproductive health-related content through social media (48.4%). In terms of perceived effectiveness, 34.4% of adolescents considered social media highly effective for reproductive health promotion. Table 2. Bivariate Analysis of Factors Associated with the Effectiveness of Social Media as a Reproductive Health Promotion Tool among Adolescents.

Table 2. Bivariate Analysis of Factors Associated with the Effectiveness of Social Media as a Reproductive Health Promotion Tool

Variable	Effective n (%)	Not Effective n (%)	OR	95% CI	P-value
Frequent exposure to reproductive health content	69 (75.8)	22 (24.2)	2.84	1.63–4.95	<0.001
High perceived credibility of information	81 (78.6)	22 (21.4)	3.42	1.95–5.98	<0.001
High user engagement	74 (73.3)	27 (26.7)	2.67	1.54–4.61	0.001
Easy accessibility of information	88 (76.5)	27 (23.5)	3.11	1.74–5.54	<0.001

Bivariate analysis demonstrated that adolescents with frequent exposure to reproductive health content were 2.84 times more likely to perceive social media as an effective health promotion tool than those with low exposure (OR = 2.84; 95% CI: 1.63–4.95; $p < 0.001$). High perceived credibility of information showed the strongest association with perceived effectiveness

(OR = 3.42; 95% CI: 1.95–5.98; $p < 0.001$). In addition, higher user engagement and easier accessibility of reproductive health information were significantly associated with improved effectiveness of social media-based health promotion. Table 3. Multivariate Logistic Regression Analysis of Factors Influencing the Effectiveness of Social Media as a Reproductive Health Promotion Tool among Adolescents.

Table 3. Multivariate Analysis of Factors Influencing the Effectiveness of Social Media as a Reproductive Health Promotion Tool

Variable	β Coefficient	Adjusted OR	95% CI	p-value
Frequent exposure to reproductive health content	0.87	2.39	1.28–4.46	0.004
High perceived credibility of information	1.12	3.06	1.67–5.59	<0.001
High user engagement	0.74	2.10	1.16–3.79	0.011
Easy accessibility of information	0.93	2.54	1.39–4.65	0.002

Multivariate analysis revealed that perceived credibility of reproductive health information remained the strongest predictor of social media effectiveness after adjustment for other variables (AOR = 3.06; 95% CI: 1.67–5.59; $p < 0.001$). Adolescents who perceived reproductive health information on social media as credible were more likely to report positive educational impact and improved understanding. Frequent exposure, user engagement, and information accessibility also remained statistically significant predictors of perceived effectiveness.

The findings of this study indicate that social media has substantial potential as a reproductive health promotion tool among adolescents. Most respondents actively accessed reproductive health information through digital platforms, with TikTok and Instagram emerging as the most frequently used media channels. The results demonstrate that adolescents who experienced frequent exposure to reproductive health content, perceived the information as credible, and actively engaged with digital content were more likely to report positive educational outcomes. Among all examined variables, perceived credibility showed the strongest association with the effectiveness of social media-based health promotion. This finding suggests that adolescents are more responsive to reproductive health messages when information is considered trustworthy, relevant, and understandable. Accessibility and interactive engagement also contributed significantly to positive perceptions regarding health promotion effectiveness. The multivariate analysis confirms that social media effectiveness is influenced not only by exposure frequency but also by communication quality and user interaction patterns. These findings emphasize the importance of developing evidence-based digital health promotion strategies that prioritize credible content, interactive communication, and adolescent-centered approaches. The study supports integrating social media into reproductive health promotion programs to improve adolescents' access to reliable reproductive health information.

DISCUSSION

This study demonstrates that social media has become an important platform for reproductive health promotion among adolescents. The findings indicate that information accessibility, perceived credibility, user engagement, and frequency of exposure significantly influence the effectiveness of social media-based reproductive health education. Among these variables, perceived credibility emerged as the strongest predictor of effectiveness, indicating that adolescents are more likely to accept and internalize reproductive health information when the content is considered trustworthy, relevant, and understandable. This finding suggests that the success of digital health promotion depends not only on the quantity of information distributed through social media but also on the quality and reliability of communication (Macapagal et al., 2025).

The strong relationship between perceived credibility and educational effectiveness highlights the growing importance of digital health literacy among adolescents (Madu et al., 2023). Social media platforms expose adolescents to reproductive health information from multiple sources, including healthcare professionals, educational institutions, influencers, peer

groups, and commercial accounts (Ma'rufa et al., 2024). In this environment, adolescents continuously evaluate whether information is believable before integrating it into their understanding and behavior (Meherali et al., 2024). Consequently, reproductive health campaigns that rely solely on information dissemination may fail to generate meaningful impact if adolescents perceive the messages as inaccurate, judgmental, or disconnected from their lived experiences. These findings indicate that evidence-based communication strategies are essential for increasing adolescents' trust toward digital reproductive health information (Meherali et al., 2025).

Another important finding is the significant influence of user engagement on perceived effectiveness. Adolescents who actively interacted with reproductive health content through commenting, sharing, discussing, or repeatedly viewing educational materials reported more positive educational experiences (Melkumova et al., 2024). This result reinforces the perspective that social media functions as an interactive communication ecosystem rather than merely a passive information-delivery channel (Menicagli et al., 2026). Unlike traditional health education approaches characterized by one-way communication, social media enables adolescents to participate in interpreting and exchanging health information actively. Interactive engagement may strengthen emotional connection with educational content, improve message retention, and encourage peer-based reinforcement of reproductive health knowledge (Rodríguez-Guzmán et al., 2026).

Accessibility also emerged as a critical factor influencing effectiveness. Adolescents perceived social media as an accessible source of reproductive health information because digital platforms provide flexible, rapid, and relatively private access to educational content (Rosso et al., 2026). This finding is particularly relevant in sociocultural environments where discussions related to sexuality and reproductive health remain sensitive or stigmatized (Safari et al., 2024). Many adolescents may experience discomfort discussing reproductive health issues directly with parents, teachers, or healthcare providers. In such situations, social media becomes an alternative educational space that allows adolescents to seek information more independently. This suggests that digital platforms may help reduce barriers to reproductive health education, particularly for adolescents with limited access to formal health information (Shimels et al., 2025).

The present study contributes conceptually to the understanding of digital health promotion by demonstrating that social media effectiveness is multidimensional. Previous discussions often emphasized exposure frequency as the primary determinant of digital health promotion outcomes (Sidhu et al., 2025). However, the current findings indicate that exposure alone is insufficient to produce meaningful educational impact. Effectiveness appears to result from the interaction between accessibility, communication quality, credibility, and user engagement (Taylor Salisbury et al., 2026). This integrated perspective shifts attention from technology-centered approaches toward communication-centered and user-centered frameworks in adolescent reproductive health promotion (Thompson et al., 2025).

The findings are generally consistent with previous studies that have reported that social media can improve adolescents' awareness and access to reproductive health information. Earlier research has shown that interactive visual content distributed through digital platforms may improve knowledge retention and increase adolescent participation in health communication activities. Similar studies have also reported that adolescents perceive online communication environments as less stigmatizing than conventional face-to-face reproductive health education. The present study strengthens previous evidence by demonstrating that credibility and peer interaction remain central determinants of successful digital health promotion.

Nevertheless, this study extends earlier literature by integrating informational, behavioral, and perceptual dimensions into a single analytical framework. Many previous studies have evaluated social media effectiveness using isolated indicators, such as frequency of use or general knowledge scores. In contrast, the present study demonstrates that adolescents' experiences with reproductive health information are shaped simultaneously by trust, accessibility, interaction patterns, and communication quality. This broader perspective provides a more comprehensive

understanding of how adolescents engage with reproductive health information within digital environments.

The findings also reinforce concerns regarding misinformation circulating on social media platforms. Adolescents may be exposed to large volumes of reproductive health information, yet not all content is scientifically accurate or educationally appropriate. The strong association between credibility and effectiveness suggests that misinformation may reduce the educational value of social media-based health promotion. Adolescents who encounter conflicting or misleading information may develop confusion, distrust, or inaccurate perceptions regarding reproductive health practices. Therefore, strengthening digital health literacy is essential to help adolescents critically evaluate online information sources and distinguish credible information from misinformation.

Several limitations should be considered when interpreting the findings of this study. First, the cross-sectional design limits causal inference regarding the relationship between social media use and the effectiveness of reproductive health promotion. Although significant associations were identified, the study cannot confirm direct causal relationships. Second, the use of self-reported questionnaires may introduce recall and social desirability biases, as respondents may provide socially acceptable answers. Third, the study was conducted within a limited geographical setting involving adolescents from selected schools in Makassar, South Sulawesi, which may limit the generalizability of findings to broader populations. In addition, social media environments evolve rapidly, and changes in platform algorithms, communication trends, and user behavior may influence adolescents' exposure to reproductive health information over time.

Future research should explore the long-term behavioral impact of social media-based reproductive health promotion through longitudinal and experimental designs. Further investigations are also needed to examine how specific communication styles, digital content formats, and platform characteristics influence adolescents' trust formation and behavioral decision-making. Incorporating broader sociocultural variables, such as parental communication, educational background, and digital health literacy, may also provide deeper insight into the factors influencing the effectiveness of digital reproductive health promotion.

Overall, this study highlights that the effectiveness of social media in reproductive health promotion depends on the interaction between accessibility, credibility, engagement, and communication quality. The findings support integrating adolescent-centered digital communication strategies into reproductive health promotion programs, while emphasizing the importance of evidence-based, contextually relevant communication approaches in contemporary public health practice.

CONCLUSION

This study concludes that social media is an effective platform for reproductive health promotion among adolescents, particularly when health information is accessible, credible, interactive, and relevant to adolescents' daily experiences. The findings demonstrate that perceived credibility of information is the strongest factor influencing the effectiveness of digital reproductive health education, followed by user engagement, accessibility, and frequency of exposure. These results indicate that adolescents are more likely to understand and accept reproductive health information when communication is delivered through trusted and engaging digital environments. The study also highlights that the effectiveness of social media-based health promotion cannot be determined solely by the quantity of information exposure. Communication quality, trust formation, and interactive participation play important roles in shaping adolescents' educational experiences and their understanding of health. Based on these findings, healthcare institutions, schools, and policymakers should strengthen evidence-based digital health promotion strategies by developing credible, adolescent-centered, and culturally sensitive reproductive health content across multiple social media platforms. In addition, digital health literacy programs should be integrated into adolescent health education to improve critical evaluation of online reproductive health information and reduce the risks associated with misinformation.

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Conflict of Interest

The authors declare that there are no conflicts of interest related to this study, including financial, institutional, or personal relationships that could influence the research process or interpretation of findings.

Authors' Contributions

Matilda Martha Paseno: Conceptualization, methodology, investigation, data curation, formal analysis, writing – original draft, and project administration.

Rosmina Situngkir: Supervision, validation, methodology, writing, review and editing, and interpretation of findings.

Yunita Gabriela Madu: Data collection, investigation, visualization, literature review, and manuscript editing.

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Declaration of Generative AI Use

The authors used generative artificial intelligence tools only to assist with language refinement and grammatical improvement during manuscript preparation. All conceptual development, data interpretation, analysis, and final manuscript content were reviewed critically and approved in their entirety by the authors. The authors remain fully responsible for the accuracy, integrity, and originality of the work.

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