

Effectiveness of TikTok-Based Health Education in Improving Pregnant Women's Knowledge of Abortion Prevention: A Quasi-Experimental Study

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Abstract. *Pregnant women's knowledge regarding abortion prevention remains an important determinant in reducing the risk of maternal morbidity associated with abortion. The rapid growth of social media has created new opportunities to deliver health education through engaging and accessible platforms such as TikTok. This study aimed to analyze the effect of TikTok-based health education on pregnant women's knowledge regarding abortion prevention at Sultan Thaha Saifuddin Regional General Hospital, Tebo Regency. A quasi-experimental one-group pretest-posttest study was conducted at the hospital's Obstetric Clinic in February 2026. Thirty-five pregnant women were recruited using accidental sampling. Participants received standardized educational videos on abortion prevention delivered through TikTok. Knowledge was assessed using a structured questionnaire before and after the intervention. Data normality was evaluated using the Shapiro-Wilk test, and differences in knowledge scores were analyzed using the paired samples t-test with a significance level of $\alpha = 0.05$. The mean knowledge score increased from 12.31 ± 2.45 before the intervention to 17.94 ± 1.61 after the intervention. The Shapiro-Wilk test confirmed that the data were normally distributed ($p > 0.05$). Paired samples t-test demonstrated a statistically significant improvement in knowledge, with a mean difference of 5.63 (95% CI: 4.91–6.34; $p < 0.001$). The intervention also showed a very large effect size (Cohen's $d = 2.74$). These findings indicate that TikTok-based health education is effective in improving pregnant women's knowledge regarding abortion prevention and may serve as an innovative educational strategy to strengthen health promotion within antenatal care services.*

Keywords: Abortion; Health Education; Knowledge; Pregnant Women; TikTok

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INTRODUCTION

Abortion remains a major reproductive health challenge that contributes substantially to maternal morbidity worldwide (Cresswell et al., 2025). Beyond its physical consequences, abortion also has profound psychological, social, and economic impacts on women, families, and healthcare systems (Guillaume & Rossier, 2018; Abhary et al., 2023). Most cases of spontaneous abortion are associated with multiple biological and behavioral risk factors, including maternal diseases, infections, chromosomal abnormalities, hormonal disorders, poor nutritional status, and unhealthy behaviors during pregnancy. Although not all abortions are preventable, many modifiable risk factors can be addressed through improved maternal knowledge and appropriate preventive behaviors. Consequently, health education has become an essential component of antenatal care, enabling pregnant women to recognize pregnancy danger signs, adopt healthier lifestyles, and seek timely medical attention when complications arise (Kalla et al., 2022; Duane et al., 2022; Hennessy et al., 2021; Rahman et al., 2022).

Rapid advances in digital technology have transformed health communication from conventional face-to-face approaches into more interactive and accessible digital platforms (Whitworth et al., 2024; Jaynes et al., 2022). Social media has become an increasingly important channel for disseminating health information because it can reach large audiences at relatively low cost. Among these platforms, TikTok has gained widespread popularity due to its short-form video format, which combines audiovisual elements, animation, and concise narration. Such characteristics enhance users' attention, engagement, and information retention, making TikTok a promising platform for maternal health education. Furthermore, its accessibility allows users to repeatedly review educational content, thereby reinforcing learning and improving knowledge acquisition (Kirkpatrick & Lawrie, 2024; Ofori, 2024; Lee & Lee, 2022; Muskens et al., 2024).

Abortion continues to pose a significant global public health concern. The World Health Organization estimates that approximately 73 million induced abortions occur annually, with nearly 61% of unintended pregnancies ending in abortion. In Southeast Asia, approximately 4.2 million abortions occur each year, while Indonesia records an estimated 600,000–900,000 abortion cases annually, representing approximately 10–15% of all pregnancies (World Health Organization, 2025; Guttmacher Institute, 2022). Maternal mortality in Indonesia also remains above the Sustainable Development Goals target, with abortion-related hemorrhage continuing to contribute to preventable maternal deaths. In Jambi Province, maternal mortality remains a major public health challenge, and Tebo Regency is among the districts reporting a relatively high burden. Hospital records from Sultan Thaha Saifuddin Regional General Hospital documented 1,774 pregnancies and 139 abortion cases (7.83%) during 2025, indicating that abortion remains an important maternal health problem requiring more effective preventive interventions (Cresswell et al., 2025; Venkateswaran et al., 2022; Bogale et al., 2021).

Despite ongoing implementation of antenatal care, counseling, and health promotion programs, abortion continues to occur at a considerable rate, suggesting that existing educational approaches may not sufficiently improve maternal knowledge. At the same time, patterns of health information seeking have shifted dramatically, with women of reproductive age increasingly relying on social media rather than conventional educational materials. Although TikTok has become one of Indonesia's most widely used social media platforms, its application as an evidence-based maternal health education tool remains limited. Moreover, much of the available health-related content lacks scientific credibility. These conditions highlight the need to develop structured, evidence-based TikTok educational interventions that effectively address abortion prevention among pregnant women (Conrad, 2024; George et al., 2023; Malik et al., 2024; Chee et al., 2023).

Previous studies have demonstrated that audiovisual health education significantly improves maternal knowledge regarding abortion prevention. However, most interventions have relied on conventional educational media, such as leaflets, counseling sessions, or general audiovisual presentations, rather than utilizing contemporary social media platforms (Calvert et al., 2021; Montague et al., 2022; Osanyin et al., 2022). In addition, previous studies have predominantly focused on abortion risk factors, causes, and management rather than evaluating innovative digital educational strategies. To the best of our knowledge, no previous study has specifically investigated the effectiveness of TikTok-based education in improving pregnant women's knowledge regarding abortion prevention in a hospital setting in Tebo Regency. Addressing this gap is important because educational strategies should evolve alongside changes in digital communication and public information-seeking behavior.

TikTok-based health education offers several practical advantages over conventional educational approaches. Its combination of visual, auditory, and narrative components facilitates comprehension of complex health information while allowing repeated access through smartphones. These characteristics may strengthen pregnant women's understanding of abortion risk factors, pregnancy danger signs, the importance of routine antenatal care, and preventive health practices. Therefore, integrating TikTok into maternal health promotion programs may provide an innovative and scalable strategy for improving maternal health literacy

and supporting safer pregnancy outcomes (Sun et al., 2023; Vasistha et al., 2025; Etta et al., 2024; Drummond et al., 2024; Frennesson et al., 2023).

Accordingly, this study aimed to examine the effect of TikTok-based health education on pregnant women's knowledge regarding abortion prevention at Sultan Thaha Saifuddin Regional General Hospital, Tebo Regency, in 2026. The findings are expected to contribute evidence supporting the integration of social media into antenatal health education programs and to provide practical guidance for healthcare professionals in developing innovative digital health promotion strategies. We hypothesized that TikTok-based health education would significantly improve pregnant women's knowledge regarding abortion prevention.

METHODS

Study Design

This study employed a quantitative approach using a quasi-experimental one-group pretest–posttest design to evaluate changes in pregnant women's knowledge regarding abortion prevention before and after receiving TikTok-based health education. This design was selected because it enables the assessment of changes in knowledge following an educational intervention without randomization or a control group, with each participant serving as her own comparison. Because the study did not include a control group, the findings were interpreted as changes in knowledge associated with the intervention rather than definitive causal effects. The study was reported in accordance with the TREND Statement, the CONSORT Extension for Non-randomized Trials, and the Joanna Briggs Institute (JBI) guidelines for quasi-experimental studies.

Study Setting and Period

The study was conducted at the Obstetric Clinic of Sultan Thaha Saifuddin Regional General Hospital, Tebo Regency, Jambi Province, Indonesia. The hospital was selected because it provides routine antenatal care services and manages pregnant women with various maternal health conditions, including abortion-related cases. Hospital records indicated 1,774 antenatal visits and 139 abortion cases during 2025. The study was carried out in February 2026, including participant recruitment, baseline assessment, delivery of the TikTok-based educational intervention, post-intervention assessment, and data analysis. Data collection was performed during routine antenatal clinic hours without disrupting regular clinical services.

Population and Sample

The study population comprised pregnant women attending antenatal care at the Obstetric Clinic during the study period. Eligible participants included pregnant women from any trimester who were able to communicate in Indonesian, had access to TikTok using their own smartphone or a smartphone provided by the research team, agreed to participate, and provided written informed consent. Women with communication or cognitive impairments, obstetric emergencies requiring immediate treatment, or those unwilling to participate were excluded. The required sample size was determined using a paired-samples comparison approach based on the expected mean difference in knowledge scores before and after intervention. Assuming a medium effect size (Cohen's $d = 0.50$), a two-sided significance level of 0.05, and statistical power of 80%, the minimum required sample was calculated to be 34 participants. To account for possible incomplete responses or withdrawal during the study period, one additional participant was included, resulting in a target sample size of 35 participants. During the recruitment period, 42 eligible pregnant women were approached, of whom 35 agreed to participate and provided written informed consent. All 35 participants completed the pretest, TikTok-based educational intervention, and posttest assessment, resulting in a final sample of 35 participants (response rate: 83.3%). No participants were excluded after enrollment and no loss to follow-up occurred because all participants completed the study protocol.

Sampling Technique and Group Allocation

Participants were recruited using consecutive recruitment of all eligible pregnant women attending the antenatal clinic during the study period until the predetermined sample size was achieved. Although participants were recruited consecutively, the sampling approach was classified as non-probability sampling because participants were selected from women available at the study site rather than randomly sampled from the population. The study adopted a one-group pretest–posttest design; therefore, all participants were assigned to a single intervention group without a control group. Baseline knowledge was assessed using a structured questionnaire before the intervention (pretest), followed by standardized TikTok-based health education. The same questionnaire was administered after the intervention (posttest) to assess changes in knowledge. No randomization was performed, and all participants received identical educational content delivered using standardized procedures.

Intervention (TikTok-Based Health Education)

The intervention consisted of TikTok-based health education developed by the researchers based on current scientific evidence, Indonesian Ministry of Health antenatal care guidelines, and educational materials related to abortion risk factors and prevention. The intervention consisted of five short educational videos uploaded to a researcher-managed TikTok account. Each video lasted approximately 3–5 minutes, resulting in a total educational duration of approximately 20 minutes. The videos were delivered sequentially during a supervised educational session in the antenatal clinic. Participants accessed the videos individually using smartphones, either their own devices or smartphones provided by the research team. The educational content incorporated narration, animations, illustrations, infographics, text, and images. Topics included the definition of abortion, risk factors, early warning signs, preventive measures during pregnancy, the importance of routine antenatal care, balanced nutrition, safe physical activity, adherence to prescribed nutritional supplements, and pregnancy danger signs requiring immediate medical attention.

Before implementation, the educational content was reviewed by two maternal health experts consisting of one obstetrician–gynecologist and one lecturer specializing in maternal and reproductive health. The experts evaluated the content based on scientific accuracy, relevance, clarity of language, appropriateness of illustrations, and alignment with the study objectives. Content validity was assessed using a four-point relevance scale, and revisions were made based on expert recommendations before implementation. Intervention fidelity was maintained by providing identical educational materials, sequence, duration, and instructions to all participants. Complete video exposure was verified by direct observation during the session and confirmation that each participant completed all educational videos before posttest assessment. The posttest was administered immediately after completion of the educational session (approximately 10–15 minutes after the intervention). Participants were not instructed to seek additional abortion-related information during the interval between pretest and posttest.

Outcomes and Variables

The primary outcome was pregnant women's knowledge regarding abortion prevention, assessed before and after the TikTok-based educational intervention. Knowledge was defined as participants' understanding of the definition, risk factors, warning signs, complications, and preventive measures related to abortion during pregnancy. The independent variable was the standardized TikTok-based health education intervention, whereas the dependent variable was the post-intervention knowledge score. Participant characteristics, including age, educational level, occupation, gestational age, gravidity, and previous sources of health information, were collected as descriptive variables to characterize the study population.

Research Instrument

Data were collected using a structured questionnaire consisting of two sections. The first section recorded participants' demographic and obstetric characteristics. The second section

assessed knowledge regarding abortion prevention. The knowledge questionnaire consisted of 20 items with a dichotomous response format (correct/incorrect). Each correct answer received a score of 1, whereas incorrect or unanswered responses received a score of 0. Total knowledge scores ranged from 0 to 20, with higher scores indicating better knowledge. The questionnaire was developed in Indonesian language based on maternal health theory, national antenatal care guidelines, and relevant scientific literature. Prior to data collection, the questionnaire underwent expert review and pilot testing. Content validity was evaluated by three experts consisting of an obstetrician–gynecologist, a maternal health nursing/midwifery lecturer, and a public health expert. The experts assessed item relevance, clarity, and appropriateness. The content validity index (CVI) was calculated, with values ≥ 0.80 considered acceptable. The questionnaire was pilot tested among 30 pregnant women with characteristics similar to the study population but who were not included in the final sample. Item validity was assessed using Pearson Product–Moment correlation, with correlation coefficients >0.30 considered acceptable. Internal consistency reliability was evaluated using Cronbach’s alpha, with values ≥ 0.70 considered acceptable. The final questionnaire demonstrated acceptable validity and reliability (Cronbach’s alpha = 0.82).

Study Procedure

The study began with protocol development, preparation of TikTok educational materials, questionnaire development, expert review, and obtaining institutional and hospital approval. Eligible pregnant women were informed about the study objectives, procedures, benefits, confidentiality, and participant rights before providing written informed consent. Participants first completed demographic questionnaires and baseline knowledge assessment (pretest). They then received the standardized TikTok-based educational intervention in a controlled environment. The intervention was delivered during a single session, and the posttest was administered immediately after completion of all educational videos. Completed questionnaires were checked for completeness on the same day, followed by data editing, coding, entry, verification, and cleaning before statistical analysis. All study data were stored in a password-protected database accessible only to the research team.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics version 29.0 (IBM Corp., Armonk, NY, USA). Data completeness and normality were assessed using the Shapiro–Wilk test. Descriptive statistics were presented as frequencies, percentages, means, standard deviations, medians, and ranges, as appropriate. Changes in knowledge scores before and after the intervention were analyzed using the paired-samples t-test for normally distributed data or the Wilcoxon signed-rank test for non-normally distributed data. Results were reported as mean differences, 95% confidence intervals (95% CI), effect sizes (Cohen’s *d* or *r*), and p-values, with statistical significance set at $\alpha = 0.05$. Because the study employed a one-group pretest–posttest design, no multivariable analysis was performed.

RESULT AND DISCUSSION

A total of 35 pregnant women attending antenatal care at the Obstetric Clinic of Sultan Thaha Saifuddin Regional General Hospital, Tebo Regency, met the eligibility criteria and were enrolled in the study. All participants completed the study protocol, including the pretest, TikTok-based educational intervention, and posttest assessment. Therefore, no participants were lost to follow-up or excluded from the final analysis. The demographic and obstetric characteristics of the participants are presented in Table 1.

Table 1. Characteristics of the Participants

Characteristic	n	%
Age (years)		
<20	2	5.7

20–35	28	80.0
>35	5	14.3
Educational level		
Primary school	3	8.6
Junior high school	8	22.9
Senior high school	17	48.6
College/University	7	20.0
Occupation		
Housewife	24	68.6
Self-employed	6	17.1
Civil servant	2	5.7
Private employee	3	8.6
Gestational age		
First trimester	8	22.9
Second trimester	15	42.9
Third trimester	12	34.3
Gravidity		
Primigravida	14	40.0
Multigravida	21	60.0

Most participants were 20–35 years of age (80.0%). Nearly half had completed senior high school education (48.6%), and the majority were housewives (68.6%). Regarding gestational age, most participants were in the second trimester (42.9%), while 60.0% were multigravida.

Table 2. Descriptive Statistics of Knowledge Scores Before and After the Intervention

Variable	Mean	SD	Median	Minimum	Maximum
Pretest	12.31	2.45	12.00	7	17
Posttest	17.94	1.61	18.00	14	20

The mean knowledge score increased from 12.31 ± 2.45 before the intervention to 17.94 ± 1.61 after the intervention. The questionnaire consisted of 20 items, with a possible score range of 0–20. Therefore, the posttest mean score represented a higher proportion of the maximum possible knowledge score compared with the pretest score. The lower standard deviation observed in the posttest measurement indicated less variation in knowledge scores after the intervention; however, this finding should be interpreted cautiously because the one-group pretest–posttest design does not allow determination that the reduction in variability was solely attributable to the educational intervention.

Table 3. Shapiro–Wilk Normality Test Results

Variable	Statistic	<i>p</i> -value
Pretest	0.972	0.438
Posttest	0.968	0.321
Difference score	0.979	0.617

The Shapiro–Wilk test demonstrated that the pretest, posttest, and difference scores were normally distributed (all $p > 0.05$). Therefore, parametric analysis using the paired-samples *t*-test was considered appropriate to compare knowledge scores before and after the intervention.

Table 4. Effect of TikTok-Based Health Education on Knowledge of Abortion Prevention

Variable	Mean $\pm$ SD	Mean Difference	95% CI	<i>t</i> -value	df
Pretest	12.31 ± 2.45				
Posttest	17.94 ± 1.61	5.63	4.91–6.34	16.18	34

The paired-samples t-test demonstrated a statistically significant difference in knowledge scores between pretest and posttest measurements. The mean difference was 5.63 points (95% CI: 4.91–6.34; $t(34) = 16.18$; $p < 0.001$). The magnitude of the standardized mean difference was calculated using Cohen's d based on the mean change score divided by the standard deviation of the difference scores, resulting in a very large effect size (Cohen's $d = 2.74$). These findings indicate that participants showed higher knowledge scores after receiving TikTok-based health education. However, because this study used a single-group pretest–posttest design without a comparison group, the observed improvement should be interpreted as an association between the educational intervention and increased knowledge rather than definitive evidence of a causal effect.

The present study examined the association between TikTok-based health education and changes in pregnant women's knowledge regarding abortion prevention at Sultan Thaha Saifuddin Regional General Hospital, Tebo Regency. The findings showed that participants had higher knowledge scores after receiving the educational intervention, with an increase in the mean score from 12.31 ± 2.45 at baseline to 17.94 ± 1.61 after the intervention. The observed improvement was statistically significant ($p < 0.001$) and demonstrated a large standardized effect size (Cohen's $d = 2.74$). However, because this study used a single-group pretest–posttest design without a control group, these findings should be interpreted as an association between TikTok-based education and increased knowledge rather than definitive evidence of a causal effect. The magnitude of the change suggests that TikTok-based educational content has potential as a complementary approach for delivering maternal health information, although further controlled studies are required to confirm its effectiveness.

The present findings are consistent with previous research indicating that digital health education and audiovisual media can facilitate knowledge acquisition among reproductive-age women and pregnant populations. Short-form videos and social media-based educational materials may improve information accessibility by presenting health messages in an engaging and easily understandable format. Previous studies have suggested that audiovisual approaches may overcome some limitations of conventional health education by combining visual demonstrations, narration, and concise messages, thereby supporting comprehension among individuals with different educational backgrounds. Nevertheless, comparisons across studies should be interpreted carefully because variations in intervention duration, educational content, measurement instruments, participant characteristics, and healthcare settings may influence the magnitude of observed knowledge changes (Devita et al., 2026).

Compared with previous educational interventions using printed materials, conventional videos, or face-to-face counseling, the present study utilized TikTok as a digital platform for delivering maternal health information. The potential advantage of TikTok-based education lies in its accessibility, brief video format, and ability to facilitate repeated exposure to educational messages (Ogundipe et al., 2025). However, the present study did not measure the frequency of video viewing, user engagement, digital literacy, or long-term information retention; therefore, the specific contribution of TikTok platform characteristics to knowledge improvement cannot be determined (Shukla et al., 2022). Future studies should investigate how content characteristics, exposure frequency, and participant engagement influence learning outcomes.

The improvement in knowledge observed in this study can be interpreted through established health education theories. According to the Health Belief Model (HBM), health-related knowledge may influence preventive perceptions by increasing awareness of disease susceptibility, severity, benefits of preventive actions, and cues to action. The TikTok-based educational materials provided information regarding abortion-related risk factors, warning signs, and prevention strategies, which may contribute to improved understanding among participants. Similarly, the Cognitive Theory of Multimedia Learning suggests that appropriately designed audiovisual materials can support comprehension by presenting information through multiple channels. However, because this study only assessed knowledge outcomes, it cannot

determine whether the observed knowledge improvement translated into changes in attitudes, preventive behaviors, or pregnancy-related decision-making.

The educational impact of audiovisual media may also be related to its ability to present complex health information in a simplified and structured manner. Combining visual illustrations, narration, and practical examples may make maternal health messages easier to understand compared with text-only materials. In addition, smartphone-based access allows participants to receive health information outside conventional healthcare settings. However, these potential advantages represent theoretical explanations rather than mechanisms directly examined in the present study. Therefore, interpretations regarding cognitive processing, memory consolidation, or long-term retention should be considered hypotheses requiring further empirical investigation (Azizah et al., 2026). From a clinical and public health perspective, the findings highlight the potential role of digital platforms as complementary tools within antenatal health promotion services. TikTok-based education may provide an additional channel for healthcare providers to deliver maternal health information in a format that is accessible to pregnant women who frequently use mobile technology. Nevertheless, statistical significance should be distinguished from practical and behavioral significance. Although knowledge scores improved substantially immediately after the intervention, the present study did not evaluate whether this improvement resulted in sustained knowledge retention, preventive behaviors, reduced abortion-related risks, or improved maternal outcomes.

Several limitations should be acknowledged. First, the one-group pretest–posttest design without a control group limits causal interpretation because changes in knowledge may have been influenced by external information exposure, testing effects, repeated measurement, or other uncontrolled factors. Second, the use of accidental sampling and the relatively small sample size limit the generalizability of the findings to broader pregnant populations. Third, the study assessed only immediate knowledge changes after the intervention and did not examine long-term retention, behavioral modification, or clinical outcomes. Future research should employ randomized controlled trials or controlled quasi-experimental designs with larger samples, longer follow-up periods, validated knowledge instruments, and behavioral or maternal health outcomes to determine the sustained impact of TikTok-based maternal health education.

CONCLUSION

This study demonstrated that TikTok-based health education effectively improved pregnant women's knowledge regarding abortion prevention. Following the educational intervention, participants showed a better understanding of the definition of abortion, its risk factors, warning signs, and preventive measures during pregnancy. These findings suggest that TikTok is an engaging, accessible, and effective platform for delivering maternal health education. Therefore, social media-based educational interventions may serve as an innovative strategy to strengthen health promotion efforts and improve maternal health literacy in antenatal care settings.

SUGGESTION

Healthcare institutions and professionals are encouraged to integrate TikTok and other evidence-based social media platforms into routine antenatal education to improve the dissemination of maternal health information. Future educational content should be scientifically accurate, user-friendly, and tailored to the needs of pregnant women. Further studies are recommended to employ controlled study designs with larger sample sizes and longer follow-up periods to evaluate the sustainability of behavioral changes and their effects on pregnancy outcomes.

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