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The Effect of Video-Based Educational Media on Pregnant Women's Knowledge of Pregnancy Danger Sign

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Abstract:
Pregnancy danger signs are important indicators that require immediate medical attention to prevent maternal and fetal complications. However, limited knowledge among pregnant women regarding these warning signs remains a significant public health concern. This study aimed to analyze the effect of video-based educational media on the knowledge of pregnant women about pregnancy danger signs. The research employed a quantitative pre-experimental design using a one-group pretest–posttest approach. The study involved pregnant women attending antenatal care services at a maternal health facility (N=63). Data were collected using structured questionnaires administered before and after the educational intervention. The intervention consisted of health education delivered through an educational video explaining the types, symptoms, and prevention of pregnancy danger signs. Data were analyzed using statistical tests to compare pretest and posttest scores. The results showed a significant increase in the participants' knowledge after receiving the video-based education, indicating that audiovisual media effectively improved understanding and information retention (p = 0.000, t = -18.245). The findings suggest that educational videos can serve as an innovative and accessible health promotion strategy to enhance maternal awareness and encourage timely healthcare-seeking behavior during pregnancy (mean score pretest 56.67 vs posttest 81.67).

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INTRODUCTION

Maternal health remains one of the major public health concerns worldwide, particularly in developing countries (Adams, 2023). Pregnancy is a physiological process; however, complications may occur unexpectedly and can threaten the safety of both the mother and fetus (Tawfiq, 2023). According to the World Health Organization, maternal mortality is still largely caused by

preventable complications during pregnancy, childbirth, and the postpartum period (Yunitasari, 2023). One of the important efforts in reducing maternal morbidity and mortality is improving pregnant women's knowledge regarding pregnancy danger signs (Bharti, 2023). Early recognition of danger signs enables pregnant women to seek timely medical assistance and minimize the risk of severe complications (Abie, 2023).

Pregnancy danger signs include vaginal bleeding, severe abdominal pain, persistent headaches, blurred vision, swelling of the face and hands, high fever, reduced fetal movement, and premature rupture of membranes (Kante, 2025). These conditions require immediate medical attention because delayed treatment may lead to serious health consequences (Degefa, 2024). However, many pregnant women still have limited understanding of these warning signs due to inadequate access to health information, low educational background, and ineffective health promotion strategies (Gessesse, 2024). Lack of awareness regarding pregnancy danger signs often results in delays in decision-making and delays in accessing healthcare services (Okoror, 2023).

Health education is one of the strategic approaches to improving maternal knowledge and awareness (Koovimon, 2023). In recent years, technological advancements have encouraged the development of innovative educational media, including video-based learning (Gedefa, 2023). Educational videos combine visual and audio elements, making information delivery more attractive, interactive, and easier to understand compared to conventional lecture methods or printed materials (Yoseph, 2025). Video media can improve attention, comprehension, and memory retention because participants are able to simultaneously see illustrations and hear explanations related to the educational content (Ayadi, 2025). This method is considered effective for pregnant women because it can present real-life situations and practical explanations regarding pregnancy danger signs in a simple and understandable manner (Shannon, 2024).

Several previous studies have demonstrated that audiovisual educational media positively influence health knowledge and behavior (Alamrew, 2024b). Research on maternal health education revealed that video-based interventions significantly improved pregnant women's understanding of antenatal care, nutrition, breastfeeding, and pregnancy complications (Emagneneh, 2025). Nevertheless, studies specifically examining the effect of video educational media on pregnant women's knowledge of pregnancy danger signs are still limited, particularly in local healthcare settings (Alamrew, 2024a). Previous studies often focused on general maternal education without emphasizing the recognition of emergency warning signs during pregnancy (Al-Matarneh, 2023). Therefore, this study offers novelty by specifically investigating the effectiveness of video-based educational media in improving pregnant women's knowledge about pregnancy danger signs (Shibeshi, 2024).

Theoretically, this study is based on health promotion and learning theories which explain that educational media involving audiovisual stimulation can enhance cognitive understanding and information retention (Ferede, 2024). Video-based learning allows participants to receive information through multiple sensory channels, thereby increasing learning effectiveness (Wang,

2025). In the context of maternal healthcare, educational videos may become an accessible and practical medium for healthcare providers in delivering health promotion activities during antenatal care services (Mekuriaw, 2024).

This study aims to analyze the effect of video-based educational media on pregnant women's knowledge regarding pregnancy danger signs (Sabo, 2024). The research is expected to provide empirical evidence concerning the effectiveness of educational videos as a health promotion strategy for pregnant women (Elhage, 2024). In addition, the findings may contribute to the development of innovative educational interventions in maternal healthcare services and support efforts to reduce maternal complications through early detection and prompt healthcare-seeking behavior (Ghimire, 2026). Based on the research background and theoretical framework, the hypothesis of this study is that video-based educational media significantly improve pregnant women's knowledge about pregnancy danger signs (Mba, 2024).

RESEARCH METHODS

This study employed a quantitative research approach using a pre-experimental one-group pretest–posttest design to analyze the effect of video-based educational media on pregnant women's knowledge regarding pregnancy danger signs (Fissuh, 2026). The research was conducted at a maternal and child health service facility providing antenatal care services, with pregnant women attending antenatal visits serving as the unit of analysis (Dure, 2025). The study population consisted of all pregnant women visiting the healthcare facility during the research period, while the sample was selected using purposive sampling based on inclusion criteria, including willingness to participate, ability to communicate effectively, and attendance at antenatal care services. Data were collected using structured questionnaires administered before and after the intervention to measure participants' knowledge regarding pregnancy danger signs such as vaginal bleeding, severe headache, swelling, abdominal pain, decreased fetal movement, and fever. The research instrument was tested for validity (item-total correlation value) and reliability prior to use (Cronbach's Alpha value). The educational intervention was delivered through an audiovisual educational video explaining the definition, symptoms, prevention, and management of pregnancy danger signs. Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) through descriptive and inferential statistical analyses. Descriptive analysis was used to describe respondents' characteristics and knowledge scores, while the paired sample t-test was applied to compare pretest and posttest results in order to determine the effectiveness of the educational intervention. The stages of data analysis included data reduction, data presentation, interpretation, and conclusion drawing with a significance level of $p < 0.05$.

RESULTS AND DISCUSSION

Results

The participants consisted of 63 pregnant women aged 20–35 years. The table presents respondents' characteristics, including age, education level, and occupation status. These characteristics provide contextual information

regarding the demographic background of the respondents included in this study.

Table: 1 Respondent Characteristics

Respondent Characteristics	Category	n	%
Age	20-35	63	100
Education	Elementary School	4	6.3
	Junior High School	4	6.3
	Senior High School	44	69.8
	Bachelor's Degree	11	17.5
Occupation	Employed	49	77.8
	Unemployed	14	22.2

Based on Table 1, the results showed that all respondents (100%) were within the reproductive age group of 20–35 years. This age range is considered the optimal childbearing period, which is associated with better maternal health conditions and lower pregnancy risks. In terms of educational background, the majority of respondents had completed Senior High School education, accounting for 44 respondents (69.8%). Meanwhile, 11 respondents (17.5%) held a Bachelor's Degree, and a smaller proportion had lower educational levels, with 4 respondents (6.3%) completing Elementary School and another 4 respondents (6.3%) completing Junior High School. Regarding occupation, most respondents were employed, totaling 49 respondents (77.8%), while the remaining 14 respondents (22.2%) were unemployed. These demographic characteristics indicate that the participants generally had moderate to good educational backgrounds and active occupational status, which may influence their access to health information and their ability to understand educational interventions related to pregnancy danger signs (Zumbana, 2025).

The pretest results of pregnant women's knowledge regarding pregnancy danger signs before the intervention was implemented. These data provide an overview of the baseline knowledge of the participants prior to receiving video-based educational media.

Tabel 2: Pretest Score

Category	n	%
Poor	32	50.8
Fair	31	49.2
Good	0	0
Total	63	100

Based on Table 2, the results showed that the majority of respondents had poor knowledge levels in the pretest category, with 32 respondents (50.8%). In addition, 31 respondents (49.2%) were categorized as having fair knowledge levels, while no respondents were categorized as having good knowledge levels (0%). These findings indicate that the baseline knowledge of pregnant women regarding pregnancy danger signs before the intervention was relatively low and

not yet optimal. The absence of respondents in the good knowledge category further highlights the limited understanding of essential maternal health information among participants at the initial stage. This situation suggests that most pregnant women had insufficient exposure or understanding of danger signs during pregnancy, which may increase the risk of delayed recognition of complications. Overall, the pretest results emphasize the need for effective educational interventions to improve knowledge levels and enhance awareness of pregnancy danger signs among pregnant women in order to support safe pregnancy outcomes (Soomro, 2024). The posttest results of pregnant women's knowledge regarding pregnancy danger signs after the intervention using video-based educational media. These data are used to observe changes in the respondents' knowledge levels compared to the pretest results.

Tabel 3: Posttest Score

Category	n	%
Poor	0	0
Fair	14	22.2
Good	49	77.8
Total	63	100

Based on Table 3, the results showed that after the intervention, the majority of respondents were categorized as having a good level of knowledge, with 49 respondents (77.8%). In addition, 14 respondents (22.2%) were categorized as having a fair level of knowledge, while no respondents were found in the poor knowledge category (0%). These findings indicate a clear improvement in respondents' understanding of pregnancy danger signs following the intervention. The absence of participants in the poor knowledge category suggests that the educational intervention was effective in elevating the minimum level of knowledge among all respondents. Furthermore, the high proportion of respondents in the good knowledge category demonstrates that most participants were able to comprehend and retain the information provided. Overall, these results reflect a positive shift in knowledge distribution, indicating that the intervention successfully enhanced maternal awareness regarding pregnancy danger signs and contributed to better health knowledge outcomes among pregnant women (Tariku, 2023).

Tabel 3: Knowledge

Variabel	Mean	SD	t	df	Sig (2-tailed)
Pretest Knowlage	56.6	8.92			
Posttest Knowlage	81.67	8.92	-18.245	62	0.000

Based on the analysis using the Paired Sample T-test in SPSS, the results indicated a significant difference in the average knowledge of pregnant women before and after receiving an intervention using video-based educational media on pregnancy danger signs. The mean knowledge score prior to the intervention (pretest) was 56.67, which increased notably to 81.67 after the intervention (posttest). This improvement reflects a substantial gain in participants'

understanding of pregnancy danger signs following exposure to the educational video. Furthermore, the Paired Sample T-test revealed a significance value of p = 0.000 (p < 0.05), indicating that the alternative hypothesis (Ha) is accepted and the null hypothesis (H0) is rejected. These results confirm that the increase in knowledge is statistically significant and not due to chance. Therefore, it can be concluded that video-based educational media is effective in improving pregnant women's knowledge regarding danger signs of pregnancy (Okot, 2026).

Discussion

This study examined the effect of video-based educational media on pregnant women's knowledge regarding danger signs of pregnancy (Abebe, 2024). The findings revealed a statistically significant improvement in knowledge following the intervention, as indicated by the increase in mean scores from 56.67 in the pretest to 81.67 in the posttest. The Paired Sample T-test result (p = 0.000, p < 0.05) confirms that this improvement was statistically significant and not attributable to random variation. These results suggest that video-based educational media has a strong and measurable effect on improving cognitive outcomes in maternal health education. The magnitude of improvement also indicates that the intervention is not only statistically significant but also practically meaningful, as the increase reflects a substantial gain in understanding of critical pregnancy danger signs that are essential for early detection and timely healthcare seeking behavior among pregnant women in community settings (Derbew, 2024).

The effectiveness of the intervention can be explained through the Cognitive Theory of Multimedia Learning, which emphasizes that individuals learn more effectively when information is presented through integrated visual and auditory channels (Rachmawati, 2026). Video-based educational media enhances comprehension by transforming abstract health information into concrete visual representations, making danger signs of pregnancy easier to recognize and remember (Ahadiyah et al., 2025). Additionally, the possibility of repeated exposure to video content reinforces memory retention and strengthens learning consolidation (Nuristigfarin, 2022). Compared to conventional verbal counseling, video learning reduces cognitive load and increases engagement, particularly among pregnant women with diverse educational backgrounds (Chuwan et al., 2026). This multimodal learning approach ensures that information is processed more efficiently, leading to improved understanding and retention of essential maternal health knowledge required for safe pregnancy management and early complication prevention (Saputri et al., 2025).

A significant finding of this study is the improvement in the distribution of knowledge scores after the intervention (Adhawiyah, 2025). Before the intervention, the distribution of knowledge was relatively heterogeneous, indicating variability in baseline understanding among participants (Maulidia, 2025). However, after exposure to video-based education, the posttest distribution became more homogeneous, with a clear shift toward higher knowledge categories (Islami & Qomarih, 2025). This suggests that the intervention not only increased individual knowledge but also reduced disparities in knowledge levels among pregnant women. The more uniform

distribution indicates that video-based education is effective in standardizing the delivery of health information, ensuring that participants with lower initial understanding benefit equally from the intervention. However, because this study used a one-group pretest–posttest design without a control group, the findings cannot fully isolate the pure effect of the video intervention from external influences such as prior information exposure, participant learning effects, or interactions with healthcare providers. These potential biases may affect the internal validity of the study and could partially contribute to the observed improvement in knowledge scores. (Godana Boynito et al., 2023).

These findings are consistent with previous studies reporting that audiovisual-based health education significantly improves maternal health literacy and risk awareness (Reda et al., 2024). Video interventions have been shown to enhance attention, motivation, and information retention among adult learners, particularly in low-literacy populations (Trianinsi & Ridwan, 2025). From a theoretical perspective, the results support the Cognitive Theory of Multimedia Learning, which highlights the effectiveness of dual-channel processing in improving comprehension and retention (Fitria et al., 2025). In addition, the findings align with health behavior theories emphasizing that increased knowledge is a critical determinant of preventive health actions (Ravintaran et al., 2023). The consistency between this study and previous literature strengthens the validity of video-based education as an effective strategy for maternal health promotion and supports its broader application in antenatal care programs across diverse healthcare settings (Boynito, Worsa, et al., 2025).

The implications of this study are significant for both clinical practice and public health policy (Anggraini et al., 2024). From a practical perspective, integrating video-based educational media into antenatal care services can enhance the efficiency and consistency of health education delivered by healthcare provide. Midwives and nurses can utilize standardized video materials to ensure uniform messaging regarding pregnancy danger signs, especially in high-volume primary care settings (Boynito, Pauwels, et al., 2025). From a public health perspective, improved maternal knowledge is expected to facilitate earlier recognition of obstetric danger signs and promote timely healthcare-seeking behavior, thereby reducing delays in treatment and potentially lowering maternal morbidity and mortality rates. Furthermore, the improvement in the distribution of knowledge underscores the intervention's role in promoting health equity by reducing knowledge gaps among pregnant women with different educational backgrounds (Sarabi et al., 2024).

CONCLUSION

This study demonstrated that video-based educational media significantly improved pregnant women's knowledge regarding pregnancy danger signs, as indicated by the increase in mean posttest scores and supported by statistical analysis ($p < 0.05$). The findings suggest that audiovisual educational media can enhance comprehension and retention of maternal health information, thereby supporting early recognition of danger signs and timely healthcare-seeking behavior during pregnancy. However, the interpretation of these findings should

consider several methodological limitations, including the use of a one-group pretest–posttest design without a control group, a relatively limited sample size, and the possibility of external influences such as prior information exposure and testing effects, which may affect the internal validity and generalizability of the results. Therefore, future studies are recommended to employ randomized controlled trial (RCT) designs with larger and more representative samples, as well as longer follow-up periods of 1–3 months, to evaluate long-term knowledge retention and the sustained effectiveness of video-based educational interventions.

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