

Differences in the Effectiveness of Video and Booklet Education on Early Detection, Prevention, and Management of Preeclampsia in Pregnant Women among Health Workers

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ABSTRACT

Background: Preeclampsia is one of the leading causes of preventable maternal and fetal deaths in Indonesia if detected early. Lack of understanding about the symptoms, risk factors, and early treatment of preeclampsia remains a challenge at the community level, especially in areas with limited access to information and health services.

Purpose: The purpose of this study was to analyze the differences in the effectiveness of video and booklet education on cadres' understanding of early detection, prevention, and management of preeclampsia in pregnant women.

Methods: The research design was quasi-experimental, in which the researcher divided the respondents into two groups, namely video intervention and booklet intervention. The research sample consisted of 58 health cadres in Manisrenggo Village, using total sampling technique. The measurement tool used was a questionnaire on understanding early detection, prevention, and management of preeclampsia in pregnant women, which had been tested for validity and reliability. The research media used were videos and booklets. The research analysis was univariate, paired t-test, and independent t-test using SPSS 23.

Results: The results showed that the mean score for cadres' understanding before the booklet intervention was 40.17, which increased to 43.41 after the booklet intervention. The p-value was 0.000, indicating that the booklet intervention had an effect on cadres' understanding of early detection, prevention, and management of preeclampsia in pregnant women among health cadres before and after the intervention.

Conclusion: There is a difference in the effectiveness of video and booklet education on early detection, prevention, and management of preeclampsia in pregnant women among health cadres. Based on the mean value, video intervention is more effective than booklet intervention.

Keywords: Booklet, Cadres, Education, Preeclampsia, Pregnant Women, Video

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BACKGROUND

Preeclampsia is one of the most serious complications of pregnancy and remains a leading cause of morbidity and mortality in mothers and fetuses, especially in developing countries such as Indonesia. This disorder is characterized by increased blood pressure and protein in the urine after 20 weeks of pregnancy, which can develop into eclampsia if not treated immediately (WHO, 2021). In Indonesia, preeclampsia and eclampsia account for approximately 25% of all maternal deaths, making it a public health issue that needs to be addressed seriously (Indonesian Ministry of Health, 2022).

Preeclampsia is a pregnancy disorder characterized by hypertension (=140/90 mmHg) and proteinuria (=300 mg/24 hours) after 20 weeks of gestation in women who were previously normotensive. In some cases, preeclampsia may also occur without proteinuria, but with involvement of other organs such as renal dysfunction, liver disorders, thrombocytopenia, visual disturbances, or pulmonary edema (Magee et al., 2022). Preeclampsia is the leading cause of maternal and fetal morbidity and mortality, especially in developing countries (Efendy, 2024). Preeclampsia contributes to approximately 16% of all maternal deaths globally. Therefore, early intervention is essential to prevent more serious complications such as eclampsia, placental abruption, and HELLP syndrome (Mayer, 2020).

Pregnant women's lack of understanding about the early symptoms of preeclampsia is one of the factors that hinders early detection and treatment. Many pregnant women are unaware that high blood pressure accompanied by mild symptoms such as headaches or swollen feet can be early signs of preeclampsia. The level of knowledge among pregnant women has a significant correlation with their ability to detect preeclampsia early. Therefore, continuous, community-based health education is crucial to reducing the incidence of more severe complications (Darwati et al., 2024).

The importance of community health worker involvement is also a key focus in preeclampsia prevention strategies. Posyandu cadres can be at the forefront of providing education, conducting blood pressure screening, and assisting with the referral system (Widuri et al., 2021). Regular training of cadres can improve their competence in recognizing the symptoms of preeclampsia and providing initial treatment before referral to advanced health facilities. These efforts must be supported by simple screening tools that are easy to use at the village level, such as digital tensiometers and urine protein test kits (Zainiyah et al., 2023).

Through integrated community service programs, early detection, prevention, and treatment of preeclampsia can be significantly improved. This program will provide direct education to pregnant women and posyandu cadres, as well as practical training and early detection tools. It is hoped that this will reduce the incidence of severe preeclampsia and lower maternal and infant mortality rates. Collaborative management between the community, health workers, and higher education institutions will strengthen the maternal health care system at the grassroots level (Putri et al., 2024).

OBJECTIVE

The purpose of this study was to analyze the differences in the effectiveness of video and booklet education on cadres' understanding of early detection, prevention, and management of preeclampsia in pregnant women.

METHODS

The research design was quasi-experimental, in which the researcher divided the respondents into two groups, namely video intervention and booklet intervention. The research population was health cadres in Manisrenggo Village. The research sample consisted of 58

health cadres in Manisrenggo Village, using total sampling technique. The study was conducted in June 2025. The research variables consisted of independent variables, namely video and booklet interventions, and dependent variables, namely cadres' understanding of early detection, prevention, and treatment of preeclampsia in pregnant women. The measuring instrument used was a questionnaire on understanding early detection, prevention, and treatment of preeclampsia in pregnant women, which had been tested for validity and reliability. The questionnaire validity test results showed that 11 questions each had a value of ≥ 0.20 and a Cronbach's alpha value of 0.881, which means that the questionnaire was valid and reliable. The research media used were videos and booklets. The questionnaire was administered before and after the intervention in one day. The research analysis was univariate, paired t-test, and independent t-test using SPSS 23. The research ethics certificate was issued by STRADA University Indonesia Number: 0623487/EC/KEPK/I/04/2026.

RESULTS

The results of the study on cadres in Manisrenggo Village are described below. The characteristics of the study respondents are described in terms of age, highest level of education, and occupation, as follows:

Table 1. Characteristics of cadres based on age, highest level of education, and occupation in Manisrenggo Village (n=58)

Characteristics	Video Intervention		Booklet Intervention	
	n	%	n	%
Age				
31-40 years	6	20,7	9	31,0
41-50 years	19	65,5	18	62,1
51-60 years	4	13,8	2	6,9
Last education				
Elementary school	0	0,0	0	0,0
Junior high school	12	41,4	9	31,0
Senior high school	17	58,6	20	69,0
Occupation				
Housewife	15	51,7	14	48,3
Farmer	8	27,6	7	24,1
Trader	5	17,3	6	20,7
Entrepreneur	1	3,4	2	6,9

Source : Primary Data, 2025

Table 1 shows the characteristics of cadres based on age, highest level of education, and occupation in Manisrenggo Village. Data on the video intervention group shows that most cadres are aged 41-50 years, namely 19 respondents (65.5%), with a highest level of education of senior high school, namely 17 respondents (58.6%), and housewives, namely 15 respondents (51.7%). Meanwhile, the booklet intervention group shows that most cadres are aged 41-50 years, namely 18 respondents (62.1%), with a final education level of high school, namely 20 respondents (69.0%), and housewives, namely 14 respondents (48.3%).

Table 2. Characteristics of health workers' understanding of early detection, prevention, and management of preeclampsia in pregnant women in Manisrenggo Village (n=58)

Variable	Mean	Median	Min	Max	SD
Pre intervention video	41,41	42,00	34	50	4,297
Post intervention video	48,41	49,00	41	55	3,459
Pre intervention booklet	40,17	41,00	31	50	5,272

Post intervention booklet	43,41	43,00	32	54	5,692
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Source : Primary Data, 2025

Table 2 shows the characteristics of the variables of cadres' understanding of early detection, prevention, and management of preeclampsia in pregnant women among health cadres in the data before and after the intervention. The highest mean value was after the video intervention, which was 48.41; with a median value of 49.00; a minimum value of 41; a maximum value of 55; and a standard deviation of 3.459.

Table 3. Normality Test of Research Variable Data Before Intervention

Variable	p-value	Basis	Assumption	Test used
Pre intervention video	0,555	≥ 0,05	Normal	Paired t test
Pre intervention booklet	0,257	≥ 0,05	Normal	Paired t test T test independent

Source : Primary Data, 2025

Table 3 explains the normality test of variable data before the video and booklet intervention. The p-value before the video intervention was 0.555 and before the booklet intervention was 0.257, indicating that the data was normal. Therefore, the test used for one group was the paired t-test, while for two groups it was the independent t-test.

Table 4. Effect of video intervention on health workers' understanding of early detection, prevention, and management of preeclampsia in pregnant women in Manisrenggo Village (n=29)

Variable	Group	Mean	N	p-value
Cader understanding	Pre	41,41	29	0,000
	Post	48,41		

Source : Primary Data, 2025

Table 4 explains the effect of video intervention on cadres' understanding of early detection, prevention, and management of preeclampsia in pregnant women among health cadres in Manisrenggo Village using a paired t-test. The mean score for cadres' understanding before the video intervention was 41.41, which increased to 48.41 after the video intervention. The p-value was 0.000, indicating that the video intervention had an effect on cadres' understanding of early detection, prevention, and management of preeclampsia in pregnant women among health cadres before and after the intervention.

Table 5. Effect of booklet intervention on health workers' understanding of early detection, prevention, and management of preeclampsia in pregnant women in Manisrenggo Village (n=29)

Variable	Group	Mean	N	p-value
Cader understanding	Pre	40,17	29	0,000
	Post	43,41		

Source : Primary Data, 2025

Table 5 explains the effect of the booklet intervention on the understanding of cadres about early detection, prevention, and management of preeclampsia in pregnant women among health cadres in Manisrenggo Village using a paired t-test. The mean score for cadres'

understanding before the booklet intervention was 40.17, which increased to 43.41 after the booklet intervention. The p-value was 0.000, indicating that the booklet intervention had an effect on cadres' understanding of early detection, prevention, and management of preeclampsia in pregnant women among health cadres before and after the intervention.

Table 6. Differences in the effectiveness of video and booklet education on cadres' understanding of early detection, prevention, and management of preeclampsia in pregnant women among health cadres in Manisrenggo Village (n=58)

Variable	Group	Mean	N	p-value
Cader understanding	Video	29	48,41	0,000
	Booklet	29	43,41	

Source : Primary Data, 2025

Table 6 explains the difference in the effectiveness of video and booklet education on cadres' understanding of early detection, prevention, and treatment of preeclampsia in pregnant women among health cadres in Manisrenggo Village using an independent t-test. The mean understanding score of cadres in the video intervention was 48.41, which was higher than the mean score in the booklet intervention, which was 43.41. The p-value was 0.000, indicating that there was a difference in the effectiveness of video and booklet education on cadres' understanding of early detection, prevention, and management of preeclampsia in pregnant women among health cadres in Manisrenggo Village.

DISCUSSION

Early detection of preeclampsia is carried out through routine blood pressure monitoring, urine tests for protein, and identification of risk factors such as a history of preeclampsia, obesity, first pregnancy, maternal age <20 or >35 years, and multiple pregnancies (Brown et al., 2018). In addition, the use of biomarkers such as PlGF (placental growth factor) and sFlt-1 (soluble fms-like tyrosine kinase-1) has begun to be used as biochemical predictors to detect the risk of preeclampsia from the first trimester (Duckitt & Harrington, 2005). Regular monitoring at primary health care facilities by health workers or community cadres is an effective strategy for recognizing the early symptoms of preeclampsia before it develops into a severe condition. The management of preeclampsia is adjusted according to the severity and gestational age at the time of diagnosis. In cases of mild preeclampsia, non-pharmacological management is carried out through adequate rest, a balanced diet, and regular clinical observation. Pregnant women with this condition need to have their blood pressure checked at least once a week, as well as monitoring of fetal growth and laboratory results such as liver and kidney function every two weeks (Andriani & Maftuchah, 2022). Conversely, in cases of severe preeclampsia (blood pressure = 160/110 mmHg, target organ dysfunction, or other signs of pregnancy danger), medical intervention is urgently needed.

Preeclampsia is a pregnancy complication that can endanger both the mother and fetus if not treated properly. This condition is characterized by increased blood pressure and protein in the urine after 20 weeks of pregnancy. Early detection through routine pregnancy checkups is crucial for identifying the symptoms and risk factors of preeclampsia as early as possible. Prevention can be achieved by adopting a healthy lifestyle, maintaining an ideal body weight, and taking supplements as recommended by healthcare professionals. The management of preeclampsia must be comprehensive and tailored to the severity of the condition, ranging from close monitoring to advanced medical interventions such as early delivery if necessary.

Health cadres serve as extensions of health workers, especially midwives and nurses,

in conveying information, monitoring the health conditions of pregnant women, and facilitating referrals to health facilities if signs of pregnancy complications are found, including early symptoms of preeclampsia such as severe headaches, blurred vision, heartburn, severe edema, and high blood pressure (Nina Artika Dewi, Nur Azizah Lubis, 2023). Through home visits, integrated health service posts, classes for pregnant women, and other empowerment activities, cadres can convey important messages about healthy lifestyles during pregnancy, the importance of regular antenatal care (ANC), and the importance of recognizing and reporting symptoms of preeclampsia as early as possible.

The educational activities used interactive counseling methods, booklet distribution, video screenings, and blood pressure check demonstrations. This approach proved effective in conveying information in a simple yet meaningful way. Cadres who previously did not fully understand preeclampsia were able to recognize danger signs, such as high blood pressure, sudden swelling, and visual disturbances in pregnant women, after this activity. This may be due to the enthusiasm of the participants and their readiness to receive new information. In addition to the appropriate delivery method, the success of this education was also supported by the use of visual media and hands-on practice, which made it easier for participants to understand the material. Cadres who previously only had basic knowledge are now able to convey information about preeclampsia to the community in their neighborhood. The effectiveness of this activity shows that community-based interventions with cadre empowerment have great potential in promotive and preventive health efforts for pregnant women (Ynecology et al., 2021).

Research findings on the differences in the effectiveness of video and booklet education on cadres' understanding of early detection, prevention, and management of preeclampsia show that both media have a positive impact on improving cadres' knowledge. However, the level of effectiveness between videos and booklets differs significantly. Video media proved to be more effective in improving cadres' understanding. This is in line with research at the Bandar Jaya Community Health Center in Central Lampung, which showed a higher increase in cadres' knowledge after being given education through video media compared to booklets (63.1% vs. 42.1%; $p = 0.000$) (Leny Wulandari et al., 2024). The mechanism of video superiority lies in the presentation of audio-visual information, which attracts more attention, increases focus, and helps strengthen long-term memory. In addition, videos allow for the display of realistic simulations of warning signs, examination procedures, and initial steps for treating preeclampsia, which are difficult to achieve through text and static images alone. Meanwhile, booklets have also been shown to increase cadres' knowledge, although not as effectively as videos. Research in Lampung and Tangerang found that booklets significantly increased knowledge ($p = 0.001$) (Collins et al., 2021). The advantages of booklets are that they are easily accessible, can be read repeatedly, and are suitable for cadres with limited access to technology. However, the limitations of booklets are that they are not very interactive, require a high level of motivation to read, and are sometimes difficult to understand for cadres with low levels of education (Hotton et al., 2021).

These findings are also supported by research in Bantul that compared video and e-booklet media on pregnancy warning signs. The results showed that both media were effective in increasing knowledge, but video was significantly superior ($p = 0.031$) (Septiyono et al., 2024). This means that both videos and booklets can be used as educational tools, but videos have a greater impact on improving understanding. In the context of preeclampsia prevention, cadres, as the spearhead of health services in the community, need a comprehensive understanding of the warning signs, risk factors, and preventive measures. Video media allows cadres to visualize the real conditions of pregnant women with preeclampsia symptoms (e.g., hypertension, edema, severe headaches) so that they are easier to recognize in the field.

Conversely, booklets provide written references that can be used as guidelines when conducting counseling. Thus, both have complementary roles (Caniglia et al., 2021).

From a cognitive learning theory perspective, videos optimize visual and auditory channels, thereby accelerating the information processing and enhancing memory retention (Mayer, 2020). Meanwhile, booklets emphasize information processing through visual channels only. This explains why cadres in the video group demonstrated a higher level of understanding. However, other studies show that using a combination of media (video and booklets) has the potential to yield optimal results, as cadres can obtain more vivid explanations through videos while also having reading materials that can be used as references (Pratiwi et al., 2023). This is especially important in areas with limited access to electricity or the internet, where booklets remain a relevant alternative educational medium.

Video has advantages over other audio-visual media because it can provide explanations in a practical way. Video is also more familiar today, so many people feel comfortable using this medium. Booklets also have certain advantages over other written media, especially in the context of learning (Romero, 2021). With a neat structure, attractive visual appearance, and ease of use, booklets can be a more effective medium for conveying information. Everyone has a different way of learning. Some people find it easier to understand information through visuals, such as videos, while others prefer to study material by reading and understanding it in writing, such as booklets. Video is a good form of audio-visual educational media because it activates several senses at once during the learning process (Dwi Haryanti, Desy Widyastutik, 2023).

Video as a learning medium has a greater ability to improve understanding of balanced nutrition compared to booklets, as shown in the study (Irawati et al., 2018). However, the study did not explain the differences in the abilities of video and other media in meeting the cognitive and emotional needs of participants. Video can combine audio and visuals to convey messages that are more attention-grabbing than text alone (Phipps et al., 2016). Video engages the sense of hearing, allowing it to convey nuances of feeling that are difficult to achieve with text alone. Video can convey stories in a more interesting and lively way, so that the images displayed can make viewers feel more emotionally connected than just reading or looking at still images. Video is also easier and more flexible to view than text-based media. Overall, video can provide a more immersive experience, thereby enhancing understanding and emotional connection with the material compared to other visual media (Darmawan, 2019).

Thus, the results of this study confirm that video media is more effective than booklets in improving cadres' understanding of early detection, prevention, and treatment of preeclampsia. However, booklets still have practical value as a supplement to videos. The practical implication of these findings is the need for health centers or health workers to integrate various educational media so that cadres can understand the material more comprehensively and sustainably.

CONCLUSION

There is a difference in the effectiveness of video and booklet education on early detection, prevention, and management of preeclampsia in pregnant women among health cadres. Based on the mean values, video intervention is more effective than booklet intervention. Furthermore, the integration of a digital-based health information system can also be utilized to support the role of cadres, for example through an application for recording pregnant women's visits, reminders for ANC check-up schedules, or a real-time reporting system for preeclampsia symptoms to the community health center. This is in line with the primary health digital transformation approach currently being promoted by the Indonesian Ministry of Health. Thus, the role of health cadres and comprehensive community support are

not merely complementary but fundamental functional elements.

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CONFLICTS OF INTEREST

There is no conflict of interest in this study.

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