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The Effect of Education on Visual Inspection With Acetic Acid (VIA) Through Interactive Video on The Behavior of Women of Reproductive Age in The Working Area of Talise Health Center

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Abstract
Introduction: *VIA screening coverage in Palu City, especially at Talise Health Center, remains low at 6.75%, far below the 90% national target. In 2023, 209 women were screened (3 positive), increasing to 238 in 2024 (14 positive).* ***Objective:*** *To assess the effect of interactive video based VIA education on the behavior of women of reproductive age.* ***Method:*** *A quantitative quasi-experimental study involving 99 respondents selected through proportionate stratified random sampling. Data were analyzed using univariate methods and One Way ANOVA.* ***Results and Discussion:*** *The knowledge variable showed significant differences between groups (F=103.638; p=0.000), with the highest improvement in the interactive video group. The attitude variable also showed significant differences (F=167.219; p=0.000), with interactive video producing the best results. The practice variable showed significant differences (F=206.243; p=0.000), with interactive video having the strongest effect on improving IVA screening practices.* ***Conclusion:*** *Therefore, education using interactive videos proved to be more effective in increasing knowledge, shaping positive attitudes, and encouraging actual screening behavior among WRA.*

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Introduction

Reproductive health is a fundamental aspect of the lives of women of reproductive age (WRA), generally defined as women between the ages of 15 and 49. During this period, women experience various physiological and hormonal changes associated with reproductive capacity, including menstruation, pregnancy, childbirth, and lactation. Therefore, reproductive health requires special attention not only to ensure a woman's ability to reproduce safely but also to guarantee her overall physical, mental, and social well-being. According to the (WHO, 2022), reproductive health encompasses the right of every woman to obtain accurate information, access appropriate health services, and be protected from diseases that may endanger the reproductive organs, such as sexually transmitted infections and cervical cancer.

One of the most serious threats to women's reproductive health, particularly among women of reproductive age, is cervical cancer, which remains the second most common cancer among women worldwide, especially in developing countries. Cervical cancer is primarily caused by persistent infection with the Human Papillomavirus (HPV), notably types 16 and 18. If left untreated, these infections can lead to precancerous lesions and eventually develop into invasive cancer (Bruni et al., 2023). Despite being highly preventable and curable when detected early, cervical cancer continues to claim hundreds of thousands of lives each year, largely due to limited awareness and inadequate access to early detection services.

Globally, the World Health Organization (WHO) reported that in 2020 there were over 604,000 new cases of cervical cancer and approximately 342,000 deaths. Alarmingly, nearly 90% of these deaths occurred in low- and middle-income countries, reflecting significant inequalities in access to prevention, screening, and treatment (WHO, 2020). In Indonesia, cervical cancer ranks among the leading causes of cancer-related deaths in women. Data from GLOBOCAN (2020) recorded approximately 36,633 new cases and more than 21,000 deaths annually, making cervical cancer the second most prevalent cancer after breast cancer. In Palu City, the burden of cervical cancer also remains concerning, with 256 cases reported in 2023 and 36 cases in 2024. At the Talise Community Health Center (Puskesmas Talise), no cases were recorded in 2023, yet in 2024, three new cases were identified the highest number among all public health centers in the city (Dinas Kesehatan Kota Palu, 2024).

Screening plays a vital role in the prevention and control of cervical cancer because it allows for the early detection of precancerous changes that can be treated before progressing to invasive stages. One of the most effective, affordable, and feasible screening methods, particularly in resource-limited settings, is the Visual Inspection with Acetic Acid (VIA) test. This method involves the direct visualization of the cervix after the application of acetic acid and has proven effective in detecting precancerous lesions at an early stage (Csanádi et al., 2025). VIA screening has been shown to significantly reduce both the morbidity and mortality rates associated with cervical cancer because of its ability to provide immediate results and enable prompt treatment, such as cryotherapy or referral for advanced management.

The Indonesian government, through the Ministry of Health, has demonstrated strong commitment to implementing VIA screening as part of the National Program for Early Detection of Cervical and Breast Cancer. This program targets women aged 30–50 years to receive free VIA screening at primary healthcare facilities (Kemenkes RI, 2015). This initiative aligns with the global strategy for cervical cancer elimination declared by

WHO and serves as a key national effort to reduce the burden of cervical cancer (Agrawal, Padhan, & Panneerselvam, 2025).

Despite these initiatives, the coverage of VIA screening in Indonesia remains remarkably low. In 2023, only about 7.02% of women aged 30–50 underwent VIA screening, far below the national target of 90%. The situation in Central Sulawesi Province reflects similar challenges, where 91.1% of women of reproductive age had never undergone VIA screening. Data from Palu City also demonstrate inconsistent trends: in 2022, out of 53,148 women aged 30–50, only 4,884 underwent VIA testing with three positive results. This number increased in 2023 to 4,979 screenings with 256 positive cases, but in 2024 decreased again to 4,016 screenings, with 36 positive results (Dinas Kesehatan Kota Palu, 2024). Although the number of positive cases dropped, the coverage rate remains far from satisfactory and indicates the need for more sustainable community engagement strategies.

Several factors contribute to the low participation of WRA in VIA screening. Limited knowledge about cervical cancer and the benefits of early detection has been identified as a primary barrier (Sarcheshme & Mahdizdeh, 2024). Studies reveal that women who possess greater knowledge of cervical cancer and VIA screening are more likely to voluntarily participate in early detection programs (Asif et al, 2020). Furthermore, attitude plays a crucial role women who have positive perceptions toward screening and feel responsible for their reproductive health are more likely to undergo the test (Setiawan et al, 2022). However, a positive attitude does not always translate into actual behavior due to factors such as embarrassment, fear of results, stigma, and limited access to healthcare facilities (Puspitasari et al, 2025).

Actual participation in VIA screening results from a complex interaction among knowledge, attitudes, and broader social and cultural determinants. For instance, partner support, encouragement from healthcare workers, and community norms can either strengthen or weaken a woman's intention to participate in screening (Omondi, Shaw-ridley, & Soliman, 2022). Therefore, understanding the interplay of these factors within specific socio-cultural contexts is essential for designing effective and sustainable educational interventions to increase VIA coverage among women of reproductive age (Atnafu et al, 2024).

Health education interventions play a pivotal role in enhancing awareness and shaping preventive behavior, particularly concerning reproductive health. However, traditional approaches such as lectures and printed materials often fail to achieve meaningful behavioral change due to their one-directional and less engaging nature (Glanz et al, 2015). In recent years, interactive video media has emerged as an innovative educational tool that delivers information in a visually appealing and easily comprehensible manner while allowing active participation through simulations, quizzes, and reflections (Mayer & Fiorella, 2022). The flexibility of interactive videos, which can be replayed as needed, makes them a powerful tool for reinforcing learning and promoting behavioral change. Recent studies have demonstrated that interactive video-based interventions significantly improve knowledge retention, understanding, and behavioral intentions compared to traditional educational methods (Zhou et al, 2023). In the context of reproductive health promotion, digital and interactive media have proven effective in increasing awareness and adherence to cervical cancer screening practices. Moreover, digital platforms allow for cultural and linguistic adaptation, ensuring that health messages are contextually relevant and accessible to diverse populations (WHO, 2022).

Given these advantages, integrating digital media such as interactive videos into health promotion programs offers a promising approach to overcoming barriers to cervical cancer screening. This strategy not only enhances engagement and understanding but also helps reduce stigma and discomfort often associated with VIA examinations.

A preliminary study conducted at the Talise Health Center in June 2024 found that in 2023, 209 women underwent VIA screening, with three testing positive. In 2024, the number of women screened increased to 238, with 14 testing positive. Despite this progress, the overall coverage rate remains low only around 6.75%, far below the national target of 90%. Further investigation indicated that limited knowledge, negative attitudes, and restricted access to health information were the primary factors influencing low participation rates among WRA.

In response to these findings, this study aims to examine the effect of interactive video-based education on the knowledge, attitudes, and practices of women of reproductive age regarding VIA screening in the working area of Talise Health Center. The results of this research are expected to contribute valuable insights into developing more effective, culturally sensitive, and technologically adaptive health education strategies to increase participation in VIA screening and ultimately reduce the burden of cervical cancer among Indonesian women.

Method

This study employed a quantitative approach with a quasi-experimental design involving several treatment groups. The purpose was to assess the effect of VIA (Visual Inspection with Acetic Acid) screening education using interactive video media, compared to lecture methods and no intervention, on improving the knowledge, attitudes, and practices of women of reproductive age (WRA). The research was conducted in the working area of Talise Public Health Center (Puskesmas Talise), which includes Talise, Talise Valangguni, Tondo, and Layana sub-districts, and was carried out in August 2025.

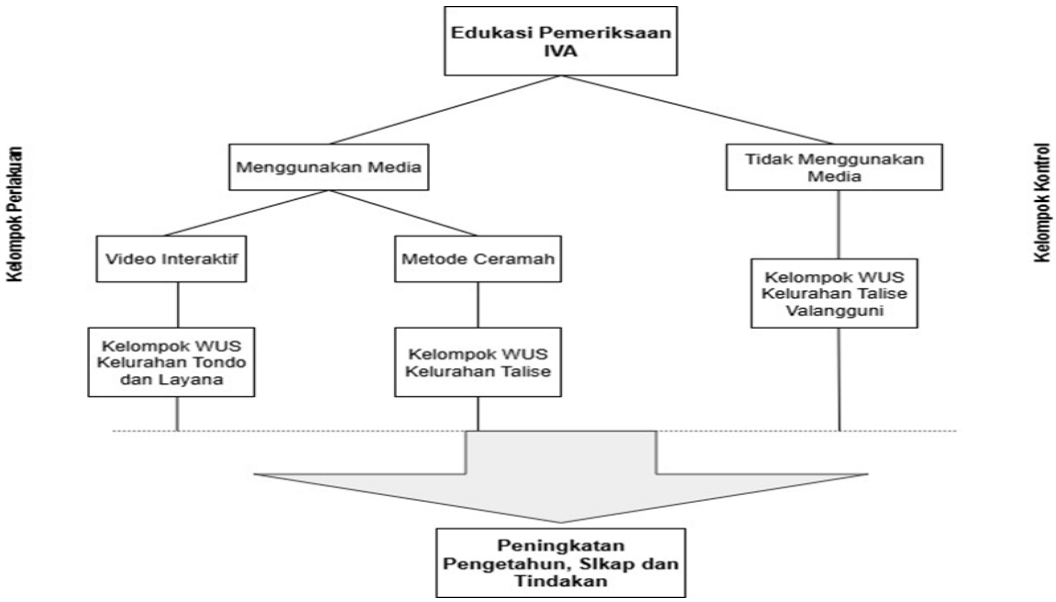

Figure 1. Research Design Flow

The study involved a total of 99 respondents, selected using the proportional stratified random sampling technique to ensure proportional representation from each sub-district. Data were analyzed bivariately using the one way ANOVA test, a parametric statistical method used to compare the means of more than two groups. This test aims to determine whether there are significant differences among the treatment groups. The basic principle involves comparing the between-group variance with the within-group variance; if the between-group variance is greater, it indicates a significant difference in group means.

Result and Discussion

1. Result

The characteristics of respondents include age, marital status, parity, and address. Age is divided into four categories: 30–35 years (peak reproductive period, initial risk of obstetric complications), 36–40 years (declining fertility, increasing risk of complications), 41–45 years (approaching perimenopause, high risk for both mother and baby), and 46–50 years (perimenopausal phase, very low chance of pregnancy with high risk). The distribution of respondent characteristics is presented in the following table:

Table 1
Distribution Based on Respondent Characteristics

Characteristics	f	%
Age		
30–35 years	24	24.2
36–40 years	21	21.2
41–45 years	16	16.2
46–50 years	38	38.4
Total	99	100
Marital Status		
Married	85	85.9
Not/Unmarried	14	14.1
Total	99	100
Parity		
No children	19	19.2
One child	17	17.2
Two children	37	37.4
Three children	17	17.2
More than three children	9	9.1
Total	99	100
Address		
Talise Sub-district	30	30.3
Talise Valangguni Sub-district	19	19.2
Tondo Sub-district	40	40.4
Layana Sub-district	10	10.1
Total	99	100

Source: Primary Data, 2025

Based on Table 1, the highest number of respondents were aged 46–50 years (38 respondents or 38.4%), while the lowest were aged 41–45 years (16 respondents or 16.2%). Of the 99 respondents, most were married (85 respondents or 85.9%), while unmarried respondents accounted for 14 (14.1%). In terms of parity, respondents with two children were the largest group (37 or 37.4%), while those with more than three

children were the fewest (9 or 9.1%). Meanwhile, most respondents came from Tondo Sub-district (40 or 40.4%), and the fewest from Layana Sub-district (10 or 10.1%).

Univariate Analysis

Univariate analysis presents the results of the mean test for respondents' knowledge, attitudes, and practices after receiving different types of IVA education: interactive video for respondents in Tondo and Layana, lectures for those in Talise, and no intervention for respondents in Talise Valangguni. The mean test results are shown in the following table:

Table 2
Distribution of Mean Scores of Treatment Groups by Variable

Variable	Treatment Group	N	Mean
Knowledge	Interactive Video	50	7.56
	Lecture	30	6.00
	No Intervention	19	4.21
Attitude	Interactive Video	50	32.06
	Lecture	30	22.63
	No Intervention	19	20.21
Practice	Interactive Video	50	31.64
	Lecture	30	22.40
	No Intervention	19	19.11

Source: Primary Data, 2025

The results indicate differences in the mean values of knowledge, attitude, and practice among women of reproductive age toward IVA screening based on the type of education received interactive video, lecture, or no intervention. The group that received interactive video education had the highest mean knowledge score (Mean = 7.56), compared to the lecture group (Mean = 6.00) and the no-intervention group (Mean = 4.21). This demonstrates that audiovisual media such as interactive videos are more effective in enhancing understanding, as they provide clear visual representations that make information easier to comprehend and remember. In contrast, the lecture method relies solely on verbal communication, making it less effective for visualization, while the no-intervention group showed lower knowledge due to the absence of exposure.

For the attitude variable, the interactive video group again showed the highest mean score (32.06), followed by the lecture group (22.63), and the no-intervention group (20.21). This indicates that interactive video exposure not only improves knowledge but also fosters more positive attitudes toward the importance of IVA screening. The interactive audiovisual format influences the affective domain of respondents, motivating them and encouraging supportive attitudes toward screening.

Similarly, the practice variable followed the same pattern. The interactive video group achieved the highest mean score (31.64), compared to the lecture (22.40) and no-intervention groups (19.11). This suggests that interactive video education effectively promotes real behavioral change. The visualization of IVA procedures in the video provides stronger practical understanding, enabling respondents not only to gain knowledge and positive attitudes but also to be motivated to take action.

Bivariate Analysis

This study employed the One Way ANOVA (Analysis of Variance) test, a parametric statistical analysis method used to determine whether there are differences in the mean values among three or more groups for one numerical dependent variable.

Table 3
One Way ANOVA Test

Variable	Source	df	Mean Square	F	Sig
Knowledge	Between Groups	2	81.483	103.638	0.000
	Within Groups	96	0.786		
	Total	**98**			
Attitude	Between Groups	2	1363.780	167.219	0.000
	Within Groups	96	8.156		
	Total	**98**			
Practice	Between Groups	2	1431.907	206.243	0.000
	Within Groups	96	6.943		
	Total	**98**			

Source: Primary Data, 2025

Based on Table 3, the Mean Square Between Groups value of 81.483 for the knowledge variable indicates the magnitude of variation in mean knowledge scores among groups (e.g., pre-intervention, post-intervention, and control groups). This value is much higher than the Mean Square Within Groups value of 0.786, which represents variation within each group. The comparison yields an F-value of 103.638 with $p = 0.000 < 0.05$, indicating a significant difference between groups. Thus, interactive video education significantly improved the knowledge of women of reproductive age regarding VIA screening.

For the attitude variable, the Mean Square Between Groups (1363.780) is much greater than the Within Groups value (8.156), showing a large difference in average attitudes between groups compared to within-group variation. The F-value of 167.219 and $p = 0.000$ indicate a significant difference, suggesting that interactive video education effectively enhanced positive attitudes and awareness about the importance of VIA screening.

Regarding the practice variable, the Mean Square Between Groups (1431.907) is considerably higher than the Within Groups value (6.943), showing greater differences in behavior between groups. The F-value of 206.243 with $p = 0.000$ indicates a significant difference, meaning that interactive video education strongly influenced behavioral changes, motivating women of reproductive age to take initiative and undergo VIA screening after the intervention.

2. Discussion

The Effect of VIA Screening Education on the Knowledge of Women of Reproductive Age (WRA)

The one way ANOVA test showed a significance value of $p = 0.000$ (<0.05), indicating a significant difference in knowledge scores among respondents who received VIA screening education via interactive video, lecture, and no intervention in the Talise Public Health Center area. This demonstrates that structured health education particularly through interactive videos effectively enhances knowledge. Respondents in the interactive video group had the highest mean scores, supporting the Health Belief Model (Rosenstock, 1974), which explains that increased knowledge strengthens perceived

susceptibility, severity, benefits, and cues to action, motivating individuals to adopt healthier behaviors (Champion & Skinner, 2008). The Social Learning Theory by (Bandura, 1986). also supports these findings, emphasizing that observation and modeling through visual media enhance understanding and self-efficacy. Likewise, Rogers, (2003) in the Diffusion of Innovations Theory stated that interactive and engaging media accelerate information adoption, making learning more effective.

Empirical studies reinforce this conclusion. Sari et al, (2025) found that interactive videos were more effective in improving reproductive health knowledge than conventional methods. Similarly, Handayani & Een Kurnaesih (2020) and (Rahmawati et al, 2021) reported that audiovisual education significantly improved maternal health knowledge, while lectures were less engaging and less effective. Furthermore, interactive videos are efficient they can be reused and shared via digital platforms such as WhatsApp or YouTube, expanding access to health education (Ningsih & Lestari, 2020). Field observations also confirmed that respondents exposed to interactive videos showed greater enthusiasm and better comprehension than those in lecture or control groups.

In conclusion, this study underscores that interactive video education is more effective than traditional lectures or no intervention in increasing knowledge about VIA screening. It highlights the importance of integrating technology-based media into health education to foster deeper learning, wider outreach, and long-term behavioral change in reproductive health promotion.

Effect of VIA Screening Education on the Attitudes of Women of Reproductive Age (WRA)

The study revealed a highly significant difference in respondents' attitudes after the intervention, with a p-value of 0.000 (<0.05), indicating that education had a substantial impact on improving attitudes. Education delivered through interactive video media produced the greatest effect, as reflected in higher mean attitude scores compared to the lecture and control groups. These findings can be explained using the Health Belief Model (Rosenstock, 1974), which states that health behavior is influenced by perceived susceptibility, severity, benefits, barriers, and cues to action. Interactive video education strengthens these components because its visual and interactive format enhances comprehension and retention, thereby increasing awareness of the importance of attitude change.

According to (Bandura, 1986), observational learning plays a crucial role in shaping behavior. Interactive videos allow respondents to observe positive behavioral models visually, encouraging imitation. This explains why the video group showed more positive attitudes than the lecture group. Similarly, (Petty & Cacioppo, 1986) emphasize that attitude change occurs through the central route (deep information processing) or peripheral route (shallow processing). Interactive videos promote the central route, leading to stronger attitude formation, whereas lectures encourage passive learning. Previous studies support these findings. (Handayani & Kurnaesih, 2020) found that interactive video-based education more effectively improved adolescents' attitudes toward reproductive health. Likewise, (Wulandari et al, 2021) reported that audiovisual media significantly enhanced pregnant women's attitudes toward anemia prevention. In contrast, Rastini & Marwati (2018) noted that lectures are less stimulating and more passive.

Overall, interactive video education proved more effective in fostering positive attitudes, enhancing understanding, and motivating women to undergo VIA screening highlighting the importance of modern, engaging educational media in promoting health behavior change.

Effect of VIA Screening Education on the Behavior of Women of Reproductive Age (WRA)

The study revealed a significant difference in respondents' actions after the intervention ($p = 0.000 < 0.05$), indicating that educational methods had a strong influence on behavior change. The group receiving interactive video-based education demonstrated the highest mean score for performing VIA screening compared to the lecture and control groups. This finding shows that interactive videos are more effective in improving health behavior because they combine text, images, sound, and animation to enhance understanding and motivation (Mayer, 2017). According to (Rosenstock (1974) Health Belief Model, behavior change is influenced by perceived susceptibility, severity, benefits, barriers, and cues to action. Interactive videos act as strong cues to action by presenting information visually and audibly, which strengthens comprehension and motivation to act. Similarly, (Bandura, 1986) Social Cognitive Theory emphasizes observational learning, where individuals learn by observing behavioral models and replicating them. The visual modeling in interactive videos effectively promotes real behavioral change. Furthermore, (Rogers, 2003) notes that the adoption of innovation depends on its relative advantage and observability qualities that make interactive videos more appealing and engaging than lectures. Mayer & Fiorella (2022) also supports this, explaining that multimedia learning optimizes understanding and retention, leading to improved health practices.

These results are consistent with previous research. Rahmawati et al., (2021) found that interactive video media significantly enhanced breast self-examination skills among adolescents compared to lectures. Sari and Yuliana (2020) also showed that video-based interventions were more effective in improving anemia prevention practices, while Apriani & Fitri (2023) reported similar results in reproductive health education using animated videos. These studies confirm that audiovisual media are easier to understand, remember, and apply in real-life behavior.

Based on field findings, the researcher concludes that interactive video media are far more relevant and effective than traditional lectures in today's digital society. Respondents exposed to interactive videos not only gained better understanding but also developed stronger motivation and confidence to undergo VIA screening. This effectiveness stems from the videos' ability to engage both cognitive and affective aspects delivering clear, memorable messages that inspire real action. Moreover, interactive video education serves as an innovative and efficient strategy to address the limited resources in healthcare facilities. It can complement health workers' roles by providing standardized, accessible, and engaging educational content. Therefore, integrating interactive video interventions into cervical cancer prevention programs, especially at the primary healthcare level, is highly recommended.

In conclusion, this study reinforces that interactive video-based education is a powerful alternative to conventional lectures. It not only conveys information but also stimulates active participation, motivation, and behavioral change toward preventive health practices. The findings highlight its potential as an effective strategy to increase

VIA screening coverage and strengthen women's self-efficacy in maintaining reproductive health (Bandura, 1986; Rosenstock, 1974).

Conclusion

There is a significant difference in knowledge among the groups, where respondents who received education through interactive video demonstrated higher knowledge about IVA screening compared to those in the lecture group and the control group. Respondents in Tondo and Layana sub-districts showed a better understanding of the purpose, benefits, and procedures of the IVA test.

There is a significant difference in attitude among the groups, where respondents who received education through interactive video displayed a more positive attitude toward IVA screening compared to those who attended lectures or received no intervention. This finding indicates that interactive video media is more effective in fostering motivation and positive acceptance of the importance of early detection of cervical cancer.

There is a significant difference in actions among the groups, where respondents who received education through interactive video were more likely to undergo IVA screening than those in the lecture or control groups. This shows that interactive video not only enhances knowledge and attitudes but also effectively drives real behavioral changes among women of reproductive age regarding IVA screening.

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