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Effectiveness of Video Education in Enhancing Knowledge and Attitudes Toward Breast Self-Examination (BSE) Among Rural Women: A quasi-experimental

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ABSTRACT
In Indonesia, especially in rural areas far from health access, breast cancer is one of the leading causes of death in women. Breast self-examination (BSE) is a simple and relatively easy method to detect breast cancer early, but unfortunately, knowledge and practice of BSE among rural women are still relatively low. This study aims to determine how much influence multimedia learning videos have on the knowledge and attitudes of women of childbearing age about BSE in rural areas. This study used a quasi-experimental design with two stages before and after treatment. This study involved sixty postmenopausal women aged over 30 who lived in Ogan Ilir Regency. Two villages were randomly selected as the intervention and control groups, each consisting of 30 people. The intervention group received education using local language video media (Palembang), while the control group received education using the lecture method. The study results showed a significant difference in increasing BSE knowledge in the intervention group (average pre-test 5.79; post-test 8.07; p <0.0001) compared to the control group. On the other hand, the intervention group's attitude score decreased slightly after the intervention (25.79 to 23.32; p = 0.021). However, there was a significant difference in knowledge change favoring the intervention group over the control group (p=0.043). For video-based education, it has been shown that knowledge about BSE increases among rural women, but attitudes remain essentially unchanged. Other community approaches and psychological support are crucial to ensure long-lasting positive attitudes towards BSE practices.

Keywords: Breast Cancer, Breast Self-Examination (BSE), Video Intervention.

INTRODUCTION

Breast cancer is a significant health problem and one of the leading causes of death in Indonesia. Based on GLOBOCAN data (2018), the population breast cancer is the type of cancer that causes the most significant number of deaths among Indonesian females, which is 17 per 100,000 population (Bray F., 2018). The delay in the detection of breast cancer, which is an issue in rural areas in Indonesia, is a significant reason for high death rates, implying a lack of

information and poor facilities. A study done by the authors observed that in villages, it is difficult for more women to be accompanied for screening, hence leading to advanced and complicated diagnoses of breast cancer that lead to more deaths (Icanervilia et al., 2023). Moreover, as reported in 2020, only 11.3% of women aged between 30 and 50 years old in Ogan Ilir Regency, South Sumatra, had a screening for breast and cervical cancer (Dinkes Kabupaten Ogan Ilir, 2021). It is demonstrable that there is a more significant disparity in countries, especially in the engagement and prevention of the disease (Setyarini & Rahaningtyas, 2018)

Breast Self-Examination (BSE) is a method that makes early breast cancer detection easier for women, not only because it is inexpensive. This method can allow women to check the palpation change in their breasts for lesions or lumps, which might be early signs of malignancy. BSE has excellent potential in cancer screening, notably in regions that lack health services (Naz et al., 2024). However, BSE practice and knowledge are still considered low, especially for rural women (Usman et al., 2020) and women of low socioeconomic status in the age range of 20-50 years (Kristina & Salsabila, 2020). For instance, 7.14% of women in Tamil Nadu, India, carried out BSE regularly before an educational intervention, increasing to 64.7% after education was presented to the women (Nisha & Murali, 2020). Like in Tamil Nadu, Nigeria has also experienced a similar situation where roughly 75.1% of women from the rural area had very low BSE knowledge (Hanson et al., 2017).

One of the most effective ways of improving the level and rate of adoption of BSE is through multimedia education, e.g., video materials. It is believed that video materials contain sight and sound and are more effective and easier to remember and understand than the traditional media of books and lectures (Xu et al., 2023). For instance, in Bihar, India, it has been reported that video-related work increased women's knowledge three times within three months after the training (Sinha & Sharma, 2024). Of great interest, research undertaken in Iran stated that teaching women BSE through videos is as efficient as doing it through direct Interviews (Karimian et al., 2022). This method is suitable in Indonesia, especially considering the rural areas with very low infrastructure and health service coverage.

However, implementing health education programs in rural areas is more adverse because of the absence of facilities or low literacy levels in health matters (Icanervilia et al., 2023). In this case, approaches that involve local health workers or caders within the community to expose such programs can be a Permanent alternative. In addition, a visualization of the content is more helpful to students because it has become possible for them to learn the subject matter at the most appropriate time and place using electronic devices. In this manner, women would practice self-breast examinations regularly and improve their self-detection skills. Although some studies have already shown the beneficial aspects of video-based clinics in enhancing women's breast examinations, there is a void in analyzing the effectiveness of such clinics on women in rural Indonesia in terms of their socio-cultural and resource circumstances. This research fills that gap by assessing the impact of multimedia and educational videos specific to the rural communities

of Indonesia. It also investigates the involvement of community-based health cadres who act as enablers, a new strategy that is not practiced much in other studies.

Based on the above background, the objective of this research is to assess multimedia-based educational videos on the knowledge and attitude of rural women towards SADARI. The benefit of this study is anticipated to influence evidence-based recommendations for health promotion planning, particularly in resource-poor settings. Additionally, the benefits of this research may also guide the design of practical, affordable, and sustainable interventions targeting women in rural settings that can, in turn, help reduce breast cancer death rates due to early screening.

RESEARCH METHOD

Research Design and Sample Selection

This research used a quasi-experimental design with two stages: pre-test and post-test. The research sample consisted of 60 women of childbearing age over 30 years who lived in Ogan Ilir Regency. Participants were divided into two groups (Intervention and Control) each consisting of 30 people. The selection of villages for the intervention and control groups was carried out randomly.

Data Collection

Data were collected through a structured questionnaire distributed in a Google Form. Before participating, all respondents were asked to provide written consent (informed consent). The questionnaire was divided into three main sections: demographics, knowledge, and attitudes. The demographic section recorded information on name, age, occupation, education level, number of children, and family history of cancer. The knowledge section contained ten questions about symptoms, risk factors, prevention methods, and breast self-examination (BSE). The attitude section contained ten questions with a Likert scale focused on attitudes towards breast cancer screening.

Intervention

The research began with a pre-test for all participants. After the pre-test stage, the intervention was carried out simultaneously in both groups. The intervention group received two animated educational videos about breast cancer and BSE, each five minutes long, with a narrative in the local language (Palembang). This animated video, created by the author, was given to participants who had completed the pre-test. The main information of each video is described in Table 1. The control group received education through a lecture method. After two weeks, all participants took part in the post-test stage using the same questionnaire as in the pre-test stage.

Table 1. The Main Information for BSE Intervention Video

Sections	Titles	Sub-titles
The First Video (Theoretical)	Introduction to breast cancer	Definition, prevalence, symptoms and types of breast cancer
	Prevention of breast cancer	Healthy lifestyles to prevent breast cancer
	Types of breast cancer screening	BSE, clinical breast examination and mammography
The Second Video (Practical)	Introduction to BSE	Definition of BSE
	Practical	BSE steps

Statistical Analysis

Descriptive statistics were used to summarize the frequency distribution of variables. For inferential analysis, the independent t-test was used to compare the results between the intervention and control groups. In contrast, the paired t-test was used to measure differences between the pre-test and post-test groups. In all tests, the significance threshold was set at 0.05

Ethics Approval Code.

This study was approved by the Health Research Ethics Committee, Faculty of Public Health Sriwijaya University, with Ethical Approval No: 400/UN9.FKM/TU.KKE/2024.

RESULTS AND DISCUSSION

Result

This research involved a total of 30 participants in each group, namely the intervention group and the control group. In the control group, there was a decrease in the number of participants to 23 people, while in the intervention group, the number of remaining participants was 28 people.

Table 2 shows that the majority of respondents had a high school education or equivalent, namely 80% of respondents for intervention group and 36.7% respondents for control group. The majority of respondents were housewives, namely 100% respondents for intervention group and 76.7% respondents for control group. The majority of 93.3% respondents for intervention group and 96.7% respondents for control group did not have a family history of cancer. The analysis of demographic characteristics between the two test groups showed no difference in demographic characteristics between the intervention and control groups (p value> 0.05).

Table 2. Respondent Characteristics (Baseline)

Variable	Intervention Group (n=30) n (%)	Control Group (n=30) n (%)	P value
Education			
Primary School	3 (10)	4 (13.3)	0.904
Junior High School	3 (10)	9 (30)	
Senior High School	24 (80)	11 (36.7)	

Variable	Intervention Group (n=30) n (%)	Control Group (n=30) n (%)	P value
Higher Education	0	6 (20)	
Respondent Occupation			
Housewife	30 (100)	23 (76.7)	0.388
Teacher	0	5 (16.7)	
Lecturer	0	1 (3.3)	
Trader	0	1 (3.3)	
Family History of Cancer			
Yes	2 (6.7)	1 (3.3)	1.000
No	28 (93.3)	29 (96.7)	
Mother's Age, mean (SD)	35.13 ± 8.753	34.20 ± 10.043	0.703
Number of Children, Mean (SD)	2.53 ± 1.167	3.04 ± 1.020	0.96

Table 3 shows the changes in the mean knowledge and attitude scores in the intervention and control groups before and after the intervention. In the intervention group, the mean score of knowledge increased significantly from 5.79 ± 1.641 in the pre-test to 8.07 ± 1.585 in the post-test ($p < 0.0001$). In contrast, in the control group, the mean score of knowledge also increased, from 5.35 ± 2.269 in the pre-test to 6.91 ± 2.37 in the post-test ($p < 0.0001$). However, this increase was smaller than the intervention group, indicating that the lecture method was not as effective as educational videos in increasing knowledge

In the attitude variable, the intervention group showed a significant decrease in the mean score, from 25.79 ± 3.436 in the pre-test to 23.32 ± 2.790 in the post-test ($p = 0.021$). In contrast, in the control group, attitude scores showed a small increase from 32.61 ± 4.459 in the pre-test to 32.91 ± 5.16 in the post-test, although this change was not statistically significant ($p = 0.711$).

Table 3. Difference in Mean Knowledge and Attitude Scores in the Intervention and Control Group Before and After Intervention

Variable	Group (n)	Pre-Test	Post-Test	P Value
		Mean ± SD	Mean ± SD	
Knowledge	Intervention (n=28)	5.79 ± 1.641	8.07 ± 1.585	<0.0001
	Control (n=23)	5.35 ± 2.269	6.91 ± 2.37	<0.0001
Attitude	Intervention (n=28)	25.79 ± 3.436	23.32 ± 2.790	0.021
	Control (n=23)	32.61 ± 4.459	32.91 ± 5.16	0.711

Based on Table 4, it is known that there is no difference between the knowledge of the intervention group and the knowledge of the control group before receiving the Intervention. At the same time, the attitude shows a significant difference. After 2 weeks of Intervention, a significant difference was obtained between the knowledge of the intervention group and the control groups' knowledge. The analysis results also showed a difference between the attitudes of the intervention group and the attitudes of the control group after 2 weeks of Intervention.

Table 4. Difference in Mean Knowledge and Attitude Scores Between Intervention and Control Groups Before and After Intervention (n=51)

Variable	Pre-Test (Intervention)	Pre-Test (Control)	P value	Post-Test (Intervention)	Post-Test (Control)	P value
	Mean ± SD	Mean ± SD		Mean ± SD	Mean ± SD	
Knowledge	5.79 ± 1.641	5.35 ± 2.269	0.428	8.07 ± 1.585	6.91 ± 2.37	0.043
Attitude	25.79 ± 3.436	32.61 ± 4.459	<0.0001	23.32 ± 2.790	32.91 ± 5.16	<0.0001

Based on Table 5, the intervention media in the form of video is quite effective in changing respondents' knowledge and attitudes compared to lecture media. The average change in knowledge in the intervention group was higher than the control group (2.29 and 1.57, respectively). In the attitude variable, there was also a higher change in attitude in the intervention group compared to the control group. There was a significant difference in the average between attitudes in the intervention and control groups.

Table 5. Difference in Mean Changes in Knowledge and Attitude Between the Two Groups

Variable	Intervention (n=28)	Control (n=23)	P value
	Mean ± SD	Mean ± SD	
Knowledge	2.29 ± 2.016	1.57 ± 1.647	0.175
Attitude	-2.46 ± 5.32	0.30 ± 3.89	0.043

Discussion

This research highlights the effectiveness of video-based education in both knowledge improvement and attitude change regarding breast self-examination (BSE). It can be seen from Table 3 that in the intervention group, the mean knowledge score improved significantly from 5.79 ± 1.641 in the pre-test to 8.07 ± 1.585 in the post-test ($p < 0.0001$). Similarly, the control group also showed an upward trend change in knowledge scores, from 5.35 ± 2.269 to 6.91 ± 2.37 ($p < 0.0001$), but this increment was lesser than that of the intervention group. These results imply that video education is superior to lecture methods in content delivery. Sinha & Sharma (2024) also posit that video interventions increase knowledge retention better and faster through attractive and easy-to-use multimedia approaches.

Table 3 also depicts a comparable trend where the mean attitude score of the intervention group decreased from 25.79 ± 3.436 in the pre-test to 23.32 ± 2.790 in the post-test ($p = 0.021$). The control group displayed no changes in attitude scores, a minimal increase from 32.61 ± 4.459 to 32.91 ± 5.16 ($p = 0.711$). The observed decline in the mean score changes in attitude in the intervention group might be attributed to heightened anxiety or fear after they were given complete knowledge of the risks associated with breast cancer. This situation is in concordance with the findings of (Dewi et al., 2019), who argue that increased awareness of cancer risk may yield some backward effects, which are negative feelings, if this awareness is not well managed via psychosocial interventions. Table 4 shows that before the intervention, there was no

significant difference in knowledge between the intervention and control groups ($p = 0.428$), while attitudes showed a significant difference ($p < 0.0001$). After two weeks of intervention, the intervention group showed a significantly higher knowledge score than the control group ($p = 0.043$). For the attitude variable, the difference between the two groups remained statistically significant, with the control group maintaining a higher mean score than the intervention group ($p < 0.0001$). These findings indicate that video-based education, while increasing knowledge, may require other means, such as support and motivation, to change or strengthen an individual's emotions.

As shown in Table 5, the mean change in knowledge score was also higher in the Interventional group (2.29 ± 2.016) than in the control group (1.57 ± 1.647), though the difference was not significant ($p = 0.175$). However, in the attitude variable, the interventional group had a negative mean change (-2.46 ± 5.32). In contrast, the control group experienced a small intervention mean change, which was positive (0.30 ± 3.89), and the difference was statistically important ($p = 0.043$). From this, it can be inferred that video-based interventions are insufficient, especially when designed to provide the requisite information. However, they do not address additional measures, such as support for attitude change. In addition, in the experimental group, the diminished positive attitudes after participation in the study point to anxiety that is likely to be associated with the receipt of information on cancer risk. This is relevant to the findings of (Dewi et al., 2019), who said that cancer education. However, it increases awareness and may also increase anxiety if it is not supplemented with much-needed psychiatric help.

This research revealed that educational video-based Intervention significantly improved women's knowledge of breast self-examination (BSE) in rural areas. Educational videos are an effective tool for delivering health information in a way that is easy to understand, quickly accessible, and appropriate for communities with limited health facilities (Kay, 2012). These results support the findings of (Sinha & Sharma, 2024) research, which showed an increase in knowledge of up to 100% after an educational video intervention in a rural community in Bihar, India. (Baby, 2022) discovered that a video-assisted breast self-examination education program was beneficial for women in certain rural areas.

Strenght and Limitation

This research approach employs the local language of the video, namely the Palembang language, which is one of the major strengths. Considering the cultural aspects by using a local language fosters a greater understanding of the educational materials among participants and enhances the participants' confidence in the information provided (Lott et al., 2021). Research shows that when communicating with people, they are likely to understand better when communicating with people familiar with the same language. The research has also supported these findings (Nisha & Murali, 2020), which illustrates the significance of local language and context in enhancing people's acceptance and comprehension of health interventions in rural communities.

With a community-based approach involving local health cadres, this program can be adopted globally in other villages in Indonesia, particularly South Sumatra Province. In many rural areas, health promotion is primarily accomplished by posyandu caders and village midwives (Solikhah et al., 2018) and this educational video program can be incorporated into normal routine activities at posyandu or posbindu. Utilizing devices such as mobile phones or tablets, which are readily available, can enable the communities to acquire a BSE education on their own time and in their preferred location (Bower et al., 2014). Also, for maximum effect, the video content can be modified to fit the region's language and cultural context, thus making it easier for people to accept and comprehend.

This research used a quasi-experimental study with pre-test and post-test, which allows direct evaluation of the impact of the Intervention on changes in knowledge and attitudes. Therefore, this design gives a better understanding of the optimal effectiveness of educational videos during a short period. Furthermore, a community-oriented strategy, which includes local health workers, is another advantage that enhances the sustainability of the education program and supports its sustainability (O'Donovan et al., 2020). As per the study of (Hanson et al., 2017), the involvement of health cadres contributes to the success of interventions in places with less developed strategies.

However, this study also has several areas for improvement. First, it is a quasi-experimental design that lacks control over external variables, such as the social culture's impact on the attitudes and behaviors surrounding BSE. The video intervention hampered interaction between the study participants and a live facilitator who could address their questions and apprehensions (Occa & Suggs, 2016), as pointed out by (Karimian et al., 2022), who recommended the use of face-to-face interventions in enhancing health literacy, the video provided just standby information. Second, the measurement duration of only two months after the intervention somehow made this study all but avoid measuring the long-term effects on BSE sociocultural practices. The findings of this research should reflect whether the knowledge gained and retained will serve its purpose of fostering BSE practice, which was another limitation that was evident in other studies that sought to assess a changed behavior after a longer time frame that was relatively prolonged (Sinha & Sharma, 2024).

CONCLUSION

According to the evidence from this study, a video-assisted education strategy enhanced the understanding of breast self-examination (BSE) women, especially among rural women who speak the local idiom and narrate using local concepts. Nevertheless, a slight decline in attitude scores suggested a need for support to begin holding positive beliefs and emotions toward BSE. The engagement of community health aides and mental cadre is critical for reinforcing favorable attitudes and assisting the respondents in coping with distress regarding the risk of having breast cancer. These findings suggest adopting video-assisted health education programs with the

dimensions of community supervision to enhance the practice of BSE. Further studies should focus on assessing the effectiveness of the combined intervention over a more extended period and consider an in-stage approach as well as a community perspective to reduce the effectiveness. This study provides valuable insight into the promotion of awareness and prevention of breast cancer in rural settings.

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