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The Effect Of Animated Videos On Breast Self-Examination (BSE) Among Midwifery Students

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Abstract

This study aimed to determine the effect of animated video-based educational interventions on adolescent girls' knowledge of breast self-examination (BSE) as an effort to support early breast cancer detection. The results showed that the educational intervention using animated videos significantly improved respondents' knowledge. The mean knowledge score increased from 75.00 before the intervention to 90.00 after the intervention, with a statistically significant difference ($p = 0.000$). These findings indicate that animated videos are effective educational media for improving adolescent girls' understanding of BSE. Animated video-based education can therefore be used as an innovative and interactive health promotion strategy to increase awareness of breast cancer prevention and early detection. Adolescent girls are encouraged to perform BSE regularly at least once a month after menstruation. Educational institutions are also encouraged to develop engaging digital-based health education media, while future researchers should consider using control groups, larger sample sizes, and additional outcome measures, including changes in attitudes and preventive behaviors.

Keywords: Animated Video, Breast Self-Examination, Knowledge, Adolescent Girls, Breast Cancer Detection.

INTRODUCTION

Cancer is a non-communicable disease that develops when cells grow abnormally and uncontrollably due to genetic alterations that disrupt the regulatory mechanisms of the cell cycle. Cancer is one of the leading causes of morbidity and mortality worldwide, particularly in developing countries where access to early detection facilities and public health education remains limited (Sosohan et al., 2026). Breast cancer remains a critical health problem affecting women worldwide. It is a malignant tumor that affects breast tissue, particularly the lobules and milk ducts. This disease can affect women of all ages. Therefore, early screening is an essential measure to reduce morbidity and mortality rates among women (Sosohan et al., 2026).

Breast cancer is estimated to affect 2.4 million women diagnosed with the disease, while the global death toll has reached 694,000 (WHO, 2026). According to the Indonesian Ministry of Health (Kemenkes RI), Indonesia recorded 408,661 new cases of all types of cancer and approximately 242,099 cancer-related deaths, of which 66,271 cases were breast cancer. Approximately 70% of newly diagnosed cases were detected at advanced stages (Kemenkes RI et al., 2025). A study conducted at Dr. Soedarso Regional General Hospital (RSUD dr. Soedarso) identified 341 breast cancer patients during the 2019–2022 period, with the highest number recorded in 2022, totaling 148 patients (Aisha et al., 2025).

Detecting breast cancer at an early stage can significantly increase the chances of recovery. Therefore, the high mortality rate is strongly influenced by inadequate knowledge and delays in early disease detection. However, most breast cancer cases in Indonesia are reportedly detected only at stages III and IV. This condition illustrates that delays in early detection directly affect patient survival, treatment burden, and quality of life. One of the simplest early detection methods that women can perform independently is breast self-examination (BSE). BSE helps women become familiar with the normal condition of their breasts so that any changes can be recognized at an early stage (Lestari et al., 2022).

The Indonesian government has incorporated BSE into its breast cancer early detection program because it is considered one of the simplest approaches and is recommended for routine practice once adolescent girls begin menstruating (Syafitra et al., 2025). In this regard, BSE education is highly relevant for young women who will enter adulthood and may face the risk of breast cancer. However, the importance of BSE education needs to be accompanied by adequate knowledge and practice among late adolescents. Based on this situation, a preliminary study was conducted among late adolescents residing in the Dormitory of the Midwifery Campus of the Pontianak Health Polytechnic, Ministry of Health.

The preliminary study revealed that 50 out of 76 respondents had never received education about BSE. Furthermore, 59 out of 76 respondents had never performed BSE, while 61 out of 76 respondents expressed interest in animated video media. These findings indicate that adolescents are increasingly interested in audiovisual educational media. Audiovisual media provide an appropriate educational approach because they combine sound and images to stimulate multiple senses. In addition, videos can present the sequence of movements and examination steps in a structured manner, which cannot be conveyed as effectively through printed media (Sianipar et al., 2022).

Based on the background described above, a research gap can be identified. Most previous studies have focused on adolescent schoolgirls or compared the effectiveness of various educational media. Meanwhile, research involving midwifery students, who will eventually serve as healthcare professionals and provide health education to the community, remains limited. The preliminary study also showed that most midwifery students had never received BSE education, had never performed BSE, and were interested in animated video media. Therefore, this study aims to examine the effect of animated video-based audiovisual media on breast self-examination among midwifery students to strengthen efforts toward early breast cancer detection.

RESEARCH METHODS

This study employed a quantitative method with a quasi-experimental approach and a one-group pretest-posttest design, in which measurements were conducted on a single group before and after an intervention in the form of education using animated video media. In a one-group pretest-posttest design, a single group of subjects is measured twice, namely before and after receiving the intervention, without a comparison group. This study was conducted at the Midwifery Dormitory of the Pontianak Health Polytechnic, Ministry of Health, on October 28, 2026.

The population consisted of all 109 midwifery students from the 2026/2027 academic cohort residing in the dormitory. The sample size was determined using Slovin's formula with a 10% margin of error, resulting in an initial sample of 53 respondents. To anticipate a potential dropout rate of 10%, the sample size was adjusted to 59 respondents. Sampling was conducted using the Simple Random Sampling technique, which provides an equal opportunity for every population member who meets the research criteria to be selected as a respondent. The selection process involved assigning a number to each population member and then randomly selecting 59 respondents. The selected respondents were subsequently informed about the research objectives and procedures and asked to provide their consent (informed consent) before participating in the research activities.

The study was conducted over one day, beginning with an explanation of the research, signing of the informed consent forms, and completion of the pretest through a Google Form distributed via WhatsApp. The respondents were given time to watch the video together in an enclosed room, ensuring that all respondents could clearly view the information presented

in the animated video. The educational materials covered the definition, signs and symptoms, and prevention of breast cancer, as well as breast self-examination (BSE) and clinical breast examination (CBE). The intervention consisted of an eight-minute animated BSE video produced by the Indonesian Ministry of Health and accessible on YouTube. The video was played three times after the respondents completed the pretest. Data were collected using a knowledge questionnaire consisting of 20 true-or-false statements, with a score of 5 for each correct answer and 0 for each incorrect answer (score range: 0–100). The questionnaire was adapted from a previously validated and reliable instrument, with a calculated r-value greater than 0.361 and a Cronbach's Alpha of 0.803.

Data were processed through the stages of editing, scoring, coding, entry, cleaning, and tabulation. Univariate analysis was conducted by presenting frequency distributions of respondent characteristics and knowledge levels. Data normality was assessed using the Kolmogorov–Smirnov test because the sample consisted of more than 50 respondents. Since the data were not normally distributed, differences between pre-intervention and post-intervention scores were analyzed using the Wilcoxon signed-rank test at a significance level of ($\alpha = 0.05$) (Mutalazimah, 2025). The ethical principles applied in this study included obtaining informed consent, maintaining respondent confidentiality, and ensuring equal treatment of all respondents.

RESULTS AND DISCUSSION

All respondents (n=53) completed both the pretest and posttest; therefore, no participants were excluded. As shown in Table 1, the majority of respondents were 18 years old (75%), followed by those aged 17 (15%) and 19 (10%). There were no respondents aged 16; thus, the group was dominated by late adolescents, consistent with the inclusion criteria.

Table 1. Frequency Distribution of Respondents by Age (n = 53)

Age	Frequency (n)	Percentage (%)
17 years	8	15.10
18 years	40	75.47
19 years	5	9.43
Total	53	100.00

Source: Questionnaire

Table 2 shows that the Kolmogorov–Smirnov test indicated that neither the pretest nor the posttest data were normally distributed ($p = 0.027$ and $p = 0.000$, respectively, with $p < 0.05$). Therefore, the hypothesis was tested using the Wilcoxon test.

Tabel 2. Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	.129	53	.027	.960	53	.073
Postets	.264	53	.000	.786	53	.000
a. Lilliefors Significance Correction						

Table 3 shows that the Wilcoxon test statistics yielded a Z-value of -6.194b, with an Asymp. Sig. (2-tailed) value of 0.000 ($p < 0.05$). Thus, there is a significant effect of using audiovisual educational media on the knowledge of late adolescents residing at the Midwifery Campus dormitory of Poltekkes Pontianak.

Tabel 3. Test Statistics[a,c]

			Postets - Pretest
Z			-6.194[b]
Asymp. Sig. (2-tailed)			.000
Monte Carlo Sig. (2-tailed)	Sig.		.000
	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.000
Monte Carlo Sig. (1-tailed)	Sig.		.000
	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.000
a. Wilcoxon Signed Ranks Test			
b. Based on negative ranks.			
c. Based on 10000 sampled tables with starting seed 926214481.			

Descriptives				
			Statistic	Std. Error
Pretest	Mean		74.43	1.351
	95% Confidence Interval for Mean	Lower Bound	71.72	
		Upper Bound	77.15	
	5% Trimmed Mean		74.69	
	Median		75.00	
	Variance		96.789	
	Std. Deviation		9.838	
	Minimum		45	
	Maximum		95	
	Range		50	
	Interquartile Range		13	
	Skewness		-.403	.327
	Kurtosis		.305	.644
Postets	Mean		91.23	.465
	95% Confidence Interval for Mean	Lower Bound	90.29	
		Upper Bound	92.16	
	5% Trimmed Mean		91.36	
	Median		90.00	
	Variance		11.448	
	Std. Deviation		3.383	
	Minimum		85	
	Maximum		95	
	Range		10	
	Interquartile Range		5	
	Skewness		-.342	.327
	Kurtosis		-.771	.644

The results indicate that animated videos have a significant effect on improving knowledge about breast self-examination (BSE) among late adolescents at the Midwifery Campus Dormitory of the Pontianak Health Polytechnic. This improvement is reflected in the increase in the median score from 75.00 to 90.00. The relatively low initial level of knowledge is noteworthy, considering that the respondents were midwifery students. This finding is consistent with Hastuti et al. (2024), who suggested that respondents with inadequate knowledge may have limited prior experience. Meanwhile, respondents with basic knowledge may have previously received information about BSE, meaning that the educational intervention primarily serves to reinforce their existing knowledge.

The improvement in responses to items that were difficult to answer during the pretest indicates that animated videos can effectively deliver information about BSE that respondents had not previously mastered. The material was presented sequentially in an animated video that could be accessed at any time, allowing respondents to review sections they did not fully understand. The large Z value in the Wilcoxon test also indicates a consistent difference between the pretest and posttest scores.

Knowledge refers to everything an individual acquires through experience, observation, education, communication, or learning processes (Adisaputra, 2026). The improvement in knowledge in this study was influenced by the information delivered through animated videos. The respondents' characteristics, who were predominantly late adolescents, also support these findings, as cognitive and information-processing abilities continue to develop during this stage of life (Handayani & Krisnawaty, 2025).

Animated videos are audiovisual media that present sequences of moving images to convey messages in a structured, engaging, and easily understandable manner (Ruanda et al., 2026). The systematic presentation of BSE-related material can help respondents understand the information provided. These findings are consistent with the study by Yena and Hayati (2025), which demonstrated that health education using animated videos significantly improves knowledge among adolescent girls.

Animated videos are currently more accessible and therefore have the potential to become an educational medium preferred by adolescents. The limited knowledge of BSE among late adolescents at the Midwifery Campus Dormitory of the Pontianak Health Polytechnic (65.79% in the preliminary study) highlights the importance of continuous education. Animated videos can be used as a complementary medium rather than a replacement for existing educational approaches, such as direct health counseling.

In the researchers' opinion, the effect of animated videos on improving knowledge can be attributed to their interactive, engaging, and systematic presentation of information through a combination of images, video, and audio, supported by the cognitive development of late adolescents, which contributes to the effectiveness of the educational intervention. This study has several limitations because it employed a one-group pretest-posttest design without a control group. Respondents' levels of engagement and understanding while watching the video may have varied. Furthermore, using the same questionnaire for both the pretest and posttest may have introduced a potential testing effect. Knowledge was also assessed immediately after the intervention; therefore, the retention of knowledge over the long term remains unknown. In addition, this study measured knowledge only and did not assess respondents' attitudes or actual BSE practices.

CONCLUSION

Educational intervention using animated media had a significant effect on improving adolescent girls' knowledge of breast self-examination (BSE) at the Midwifery Dormitory of the Pontianak Health Polytechnic, Ministry of Health. The mean knowledge score increased from 75.00 to 90.00, with a statistically significant effect ($p = 0.000$). Therefore, it can be concluded that animated videos are effective educational media for improving adolescent girls' knowledge of the importance of breast self-examination for the early detection of breast cancer.

Adolescent girls are encouraged to perform breast self-examination at least once a month after menstruation to facilitate the early detection of breast cancer. Educational institutions are advised to develop innovative and interactive digital-based health education media to encourage adolescents to access and understand health information. Future researchers are encouraged to include comparison or control groups to determine which

intervention is more effective, involve larger sample sizes, and consider additional outcome measures, such as changes in attitudes and independent preventive behaviors related to breast cancer among adolescents and women in Indonesia.

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