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The Effectiveness of Video Media and Leaflets in Breast Self-Examination Education: A Quasi Experimental Study on Indonesian Junior High School Students

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Abstract

Breast cancer is a leading cause of death among women, and early detection plays a critical role in improving outcomes. Breast Self-Examination (BSE) is a simple method to help detect early symptoms. Promoting BSE among young women is essential, and choosing appropriate educational media-uch as videos and leaflets-can enhance knowledge and awareness. This study aimed to compare the effectiveness of video and leaflet media in increasing BSE knowledge among junior high school students. A quasi-experimental design with a pretest-posttest approach was used due to limited control over external variables. A total of 102 students were divided into two intervention groups: video (n=51) and leaflet (n=51). Knowledge was assessed using questionnaires administered before and after the interventions. The Mann-Whitney test was used to analyze the data. Results showed that the video group's average score increased from 8.27 to 16.80, while the leaflet group increased from 8.37 to 16.84. Both groups demonstrated a significant improvement in knowledge (p=0.000). However, there was no significant difference between the two groups in terms of knowledge gain (p>0.05). This indicates that both video and leaflet media are equally effective in enhancing students' understanding of BSE. The choice of educational media should therefore consider the context, accessibility, and preferences of the target audience. It is recommended that content developers tailor the language and format of materials to ensure they are engaging and understandable for the intended recipients, especially when promoting preventive health behaviors among adolescents.

Keywords: Breast self-examination, Health education, Video, Leaflet, Knowledge

Introduction

Indonesia is experiencing a shift in disease patterns, from infectious diseases to non-communicable diseases, where one of the deadliest is cancer. Cancer is characterized by the growth of abnormal, malignant, and rapidly and uncontrollably growing body tissue cells, which can eventually turn into cancer cells. This process results in lesions or lumps that can spread to surrounding tissues, disrupting the normal functioning of the body and potentially leading to death (Agustina et al., 2023). Based on data from GLOBOCAN (Global Burden of Cancer Study) issued by the International Agency for Research on Cancer (IARC) under the auspices of WHO, in 2022 there were 19,976,499 cancer cases and 9,743,832 deaths due to cancer worldwide. Breast cancer ranks second with a percentage of 11.5%, after lung cancer which reaches 12.4% (Ferlay et al., 2021).

Breast cancer is also the fourth leading cause of death in the world, making it one of the top health problems for women, including in Indonesia. In Indonesia, in 2022, there were 66,271 new cases of breast cancer, making it the leading cause of death among women with 22,598 deaths. WHO estimates that the number of breast cancer cases in Indonesia will continue to increase, estimated to reach 89,512 cases by 2040 (Scharlier, 2020).

Based on data from the Central Java Health Profile in 2024, data shows that Semarang City has the highest incidence, with 46 suspected cases. The Semarang City Health Office reported 912 cases of breast cancer in 2023, which

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decreased to 775 in 2024, although several sub-districts experienced an increase. The uneven distribution of the population is key to understanding the prevalence of breast cancer in Semarang. Candisari District has always ranked second highest in prevalence, with rates of 0.57% in 2023 and 0.39% in 2024, indicating around 39 cases per 1,000 women at risk, underscoring the ongoing public health challenges (Semarang City Health Office, 2024).

The factors that contribute to the risk of breast cancer are diverse and complex. Among these factors, age is one of the most significant. As a woman ages, a woman's risk of developing breast cancer also increases. In the context of prevention, the earlier age of menarche which usually occurs in the early adolescent phase is an important moment to provide education about breast health (Sofa et al., 2024). At adolescence in junior high school age, it is a good time to provide health promotion about breast self examination. Because at the time of junior high school age, young women are experiencing a period of development and growth, one of which is the body of the breast. With a good understanding and the ability to self-examine breast from an early age, women can contribute to breast cancer early detection (Cici & Ulfiana, 2019).

The breast examination itself is one way to detect symptoms or signs of breast cancer that can be done independently. The earlier a woman understands and is able to do a breast examination on her own, the earlier breast cancer can be detected so that the earlier the treatment process can be carried out so that it can achieve a better cure rate and survival ability of breast cancer. In fact, in Indonesia, the level of self-examination practice in the community is still low, and about 70% of breast cancer patients are detected in the late stages. Therefore, it is very important to prevent the risk of breast cancer by being aware of it as early as possible (Dewi et al., 2022).

According to Leavel and Clark's theory, there are five stages of disease prevention and the first stage is health promotion, which is important to improve public understanding of health, including the practice of breast self-examination for breast cancer prevention among adolescents (Sari, 2020). The implementation of health promotion involves various factors, such as delivery methods and media used. Noviaria's (2019) research shows that self-examination of breasts through video is effective in increasing the knowledge of adolescent girls, in line with the findings of Kusila (2020) and supports the use of video media according to Edgar Dale's learning model, which states that 50% of the learning process is more effective through visual media (Rahayu et al., 2020).

Meanwhile, according to a study conducted by Eka in 2019 on the effectiveness of health education on knowledge about breast self-examination, it was found that the use of Leaflet media was significantly more effective in increasing respondents' knowledge about breast self-examination. This finding is in line with research conducted by Diana in 2021 which showed an increase in respondents' knowledge before and after receiving information through leaflet media (Wulandari, 2019).

Video combines elements of image and sound, has the advantage of involving several five senses simultaneously, namely hearing and sight. On the other hand, the leaflet, which consists of health messages in the form of pictures and writing on folded sheets, was chosen in this study because of its ability to convey information in a way that is easy for readers to understand, and practical to carry out health workers when conducting health education. In this study, the videos and leaflets used in the experiment are media that have been published by the official institution of the Indonesian Ministry of Health.

The health promotion media used in this study was accessed from the Indonesian Ministry of Health's YouTube account. In addition, as a comparative media, this study also uses Leaflet media accessed from the official website of the Ministry of Health of the Republic of Indonesia. The media is used because it is a publication media from an official institution of the Ministry of Health, especially in the field of Prevention and Control of Non-Communicable Diseases with accurate and reliable sources of information to be conveyed to the public related to the prevention of breast cancer through breast self-examination. The use of media such as videos and leaflets is also one of the factors in the success of delivering health messages for self-examinations.

This study aims to compare the effectiveness of video media and leaflet media on knowledge about breast self-examination

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in female students in Candisari District, Semarang City.

Literature Review

Breast Self-Examination

The presence of tumors/lumps around the breast can be detected precisely by conducting early detection, namely conducting a breast self-examination. The examination is an initial level examination to find out and ensure that the breasts are still in a normal state. Signs of abnormalities that need to be watched out for such as infections, tumors or cancer can be detected early. Breast cancer that has been treated at this stage has a nearly 95% chance of being cured. In Indonesia, 80% of breast cancer cases are found after an advanced or advanced stage, even treatment efforts and treatment are difficult (Departemen Kesehatan Direktorat P2PTM, 2019). Therefore, it is very important to disseminate information about prevention and early screening efforts in the community, especially women, so that they can handle it quickly and optimally.

Early screening for breast cancer is referred to as breast self-examination. The breast examination method itself is a method that is considered cheap and easy to do in detecting the risk of breast cancer early. Breast exams are done independently by each woman by learning to see and check for changes in her own breasts. This examination should be carried out routinely every month on the 7th – 10th day which is calculated from the first day of menstruation. At that time, the breasts no longer harden or hurt (Sari et al., 2022).

Health Promotion Media

Health promotion media is media in the form of educational aids used in conveying materials or messages about health. Assistive devices must be designed based on the idea that messages or information are received or captured through the five senses that humans have. The more the five senses are used to receive messages or information, the clearer the understanding or knowledge is obtained. In this study, the health promotion media used are videos and leaflets. Video is an electronic media that has advantages such as being more attractive because the image is moving. A leaflet is a form of leaflet that contains a message or health information (Jatmika et al., 2019).

Effective health promotion is very important to do because it can help people become more understanding and have a positive attitude in disease prevention efforts. Information can be obtained from various sources, ranging from health workers, family, friends, to the mass media. Exposure to information media through hearing, sight or reading is able to increase knowledge and be able to influence the decision-making actions taken. The information in the video media and leaflets includes early detection of breast cancer, breast examination time, changes in the breast that need to be watched out, breast self-examination steps, breast cancer symptoms, and breast cancer risk factors (Sari et al., 2022).

Knowledge

Knowledge is the result of knowing based on the sensing that a person has done. Knowledge is obtained from the results of understanding and occurs after sensing a certain object obtained through the senses of the eyes and ears. In making decisions and determining actions in a problem, knowledge is needed. Knowledge that covers the cognitive side has 6 levels including know, comprehension, application, analysis, synthesis, and evaluation. Behavior when based on good knowledge will be more inherent than behavior without knowledge (Cholifah, 2019). The existence of knowledge is the initial initial capital to shape a person's actions. Knowledge can be obtained from anywhere and in any way so that it can be applied in life (Jatmika et al., 2019).

Video and leaflets are educational media that are often used in health promotion, each with different characteristics and effectiveness in increasing knowledge. Video, as an audiovisual media, is able to present information dynamically through a combination of images, sound, and text, making it more attractive and easier to understand, especially for visual and auditory learners. Meanwhile, printed leaflets allow repeated access to information, making them more effective in long-term knowledge retention. Although videos can increase understanding in a short time, leaflets provide flexibility for individuals to re-read information as needed. Thus, the selection of educational media must consider the characteristics of the

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target so that the message delivered can be received optimally and contribute to increasing knowledge.

Behavior that is carried out based on a person's knowledge will last longer than actions that are not based on knowledge. Good knowledge of the importance of early detection of abnormal lumps in the breast will elicit a positive response to the practice of breast self-examination. Adolescents who have less knowledge may not respond to the practice of breast self-examination optimally. This is in line with the results of research conducted by Windy Yovita (2021) that there is a meaningful relationship between knowledge of breast self-examination practices, and adolescents who have good knowledge of breast self-examination are 6.4 times more likely to do breast self-examination practices (Sari et al., 2022).

Methodology

The research design used in this study is a quasi-experimental design, specifically using a non-equivalent group design that combines two experimental groups. This approach was intended to compare the effects of different health promotion media on changes in knowledge levels among sample participants.

Secondary schools in Candisari District consist of 9 schools, with 2 schools with public school status and 7 other schools with private school status, which are dominated by religious schools. In this study, the schools chosen as the research location are SMP (Junior High School) Negeri 5 Semarang and SMP (Junior High School) Negeri 8 Semarang, considering that these two schools are the schools with the highest number of students in Candisari District. In addition, SMP Negeri 5 Semarang and SMP Negeri 8 Semarang are public schools with the characteristics of a heterogeneous student population in terms of social and economic background compared to private schools, so they are more representative to the general public.

The population of this study is 907 students, which is a total of female students in SMP Negeri 5 Semarang and SMP Negeri 8 Semarang. The sampling technique in this study is a random sampling technique with a total sample of 102 female students with 51 respondents in each experimental group. The size of the 102 female smapel is based on the calculation of the minimum sample added to the sample reserve to anticipate any samples that drop out of the study.The independent variable in this study or that affects the dependent variable is the implementation of health promotion regarding breast self-examination through the use of promotional media, especially videos and leaflets. On the contrary, the dependent variable in this study was the increase in knowledge about breast self-examination in the respondents.

Data collection and experiments took place at SMP Negeri 5 Semarang and SMP Negeri 8 Semarang on the same day. The intervention was carried out face-to-face in a designated room, arranged into three phases: pre-test, media intervention, and post-test. The pre-test questionnaire contained knowledge variable questions and several characteristic questions of respondents related to the history of access to information about breast self-examination before receiving the intervention. This initial measurement was carried out to determine the level of knowledge of the sample before the experiment. The treatment of video media intervention was carried out by showing 1 time 5-minute video. Meanwhile, the leaflet media intervention treatment was carried out by giving respondents 10 minutes to read the leaflet and then collect the leaflet again before taking measurements after the experiment.

Data analysis was carried out through univariate analysis to examine the characteristics of respondents by assessing age distribution and access to information regarding breast self-examination before the intervention. In addition, bivariate analysis was used to evaluate changes in knowledge before and after the implementation of health promotion regarding breast self-examination in the video media and leaflet media groups, utilizing the Wilcoxon test due to the abnormal distribution of data in both groups. Furthermore, the bivariate analysis included a comparison of the effectiveness between video media and leaflet media in improving knowledge about breast self-examination, which was assessed using the Mann-Whitney test, also due to abnormal data distribution. Data analysis was carried out using the SPSS data processing application. This research has passed the health research ethics test approved by the Faculty of Public Health, Diponegoro University with

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an ethical approval statement No. 444/EA/KEPK-FKM/2024.

Result and Discussion

Univariate Analysis

1. Age

Table 1 Age Frequency Distribution.

Age (Years)	Video Groups		Leaflet Group		*p-value*
	f	%	f	%	
13	18	35.3	12	23.5	
14	29	56.9	34	66.7	0.220
15	4	7.8	5	9.8	

Based on the table 1, age frequency distribution, the majority of respondents were at the age of 14 years, there were 29 (56.9%) respondents in the video group and 34 (66.7) respondents in the leaflet group. Overall, the respondents were classified as early adolescents, namely 13-15 years old. After conducting a test different from the Man Whitney test, it was found that the p-value of 0.220 or (p> 0.05) concluded that there was no significant difference in the age of the respondents in the video media group or the age of the respondents in the leaflet media group.

2. Access to Breast Self-Examination Information.

Based on the table 2, the distribution of information access, the majority of respondents had never accessed breast examination information on their own before the experiment. After the Man Whitney test, it was found that the p value was 0.156 (p > 0.05), it was concluded that there was no difference in the history of access to breast self-examination information in the respondents in the video and leaflet groups.

Table 2 Access Breast Self-Examination Information.

Access Information	Video Groups		Leaflet Group		*ồ!! úaĭš̊ḅ*
	f	%	f	%	
Yes	23	45.1	16	31.4	0.156
Not	28	54.9	35	68.6	

From access to information, it was found that most respondents trusted their mothers or parents in discussing or asking questions about breasts and breast examinations themselves. Respondents felt comfortable when asking or discussing health information about breasts and breast exams themselves. Respondents who have accessed breast examination information on their own. In the video group, the majority have accessed information about breast cancer symptoms.

In the leaflet group, the majority have accessed information about the meaning of breast self-examination. In video groups and leaflet groups, respondents who had accessed information about breast exams on their own mostly got information from social media. The information obtained by respondents, both video groups and leaflets, is mostly sourced from online media with the most platforms, namely Tiktok.

3. Distribution of Correct Answer Frequency in Knowledge Questionnaires

Table 3 Correct Answer Frequency Distribution.

Knowledge Indicators	Video Groups		Δ	Leaflet Group		Δ
	Pre Test	Post Test		Pre Test	Post Test	
Breast self-examination is a technique for examining a woman's breasts to feel if there is an abnormal lump in the breast	34	51	+17	31	51	+20
Breast self-examination is done on the 7th – 10th day after menstruation every month	10	50	+40	15te	48	+33
Breast self-examination is done to prevent breast diseases*	0	6	+6	1	1	0
Breast self-examination can tell if there is a lump on the breast	35	50	+15	35	50	+15

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Knowledge Indicators	Video Groups		Δ	Leaflet Group		Δ
	Pre Test	Post Test		Pre Test	Post Test	
Breast self-examination can only be done by women over 20 years old*	19	43	+24	17	42	+25
Breast self-examination is done on the first day of menstruation*	5	47	+42	4	27	+23
Breast self-examination should only be done by health workers*	19	49	+30	13	43	+30
Breast self-examination if there are complaints in the breasts and armpits*	1	15	+14	5	9	+4
Mammography or clinical examination of the breast, can detect breast cancer	32	49	+17	32	44	+12
If there is an abnormal lump, you should immediately carry out a further examination	50	51	+1	48	51	+3
Breast cancer can be known through Breast self-examination	25	46	+21	34	45	+11
In every movement of Breast self - examination it is necessary to pay attention to changes in the shape, size of the breasts, surface and nipples.	38	51	+13	32	50	+18
Breast cancer can only affect women aged 30 years and above*	21	40	+19	15	36	+21
One of the breasts hanging lower than usual are signs to watch out for when Breast self-examination	18	29	+11	16	29	+13
Doing a circular movement from the nipple area to the entire breast surface is one of the steps Breast self-examination can take	19	49	+30	14	50	+36
The inward putting position is a complaint that does not require further consultation*	9	27	+18	12	29	+17
History of first menstruation less than 12 years old at risk of breast cancer	1	35	+34	3	43	+40
Breast skin wrinkles like an orange texture is normal*	7	28	+21	7	41	+34
When doing Breast self-examination no need to press on the breasts*	13	28	+15	10	30	+20
Exposure to secondhand smoke (secondhand smoke) is not a risk of breast cancer*	21	23	+2	14	30	+16
Poor diets such as containing dyes or preservatives can increase the risk of breast cancer.	28	41	+13	29	48	+19
One of the steps to REALIZE is to massage your breasts counterclockwise*	1	2	+1	1	5	+4
Wounds in the breast that do not heal are symptoms of breast cancer	14	16	+2	13	46	+33
During the Breast self-examination practice, a pillow is placed under the head for comfort*	2	31	+29	2	11	+9

*Unfavorable Question
*Note: There was no set passing threshold; the number of correct responses before and after intervention was used to assess knowledge improvement.

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Based on table 3, the correct answer frequency distribution table above, it is known that all respondents in the video media group experienced an increase in all question items. In the question item " Breast self-examination is carried out on the first day of menstruation" there was a significant increase, namely an increase of 42 respondents answering correctly from 5 respondents (pre-test) to 47 respondents (post test). Meanwhile, in the leaflet media group, most of them increased but there was one question item that did not increase, namely the item "Breast self-examination is done to prevent breast diseases" and one question item that decreased, namely the item "Breast ultrasound is one of the early detection of breast cancer".

Bivariate Analysis

Bivariate analysis was carried out to see the difference in knowledge before and after receiving media intervention and to test the comparison of knowledge changes in the video media experiment group and the leaflet media experiment group.

1. Differences in Knowledge Before and After the Intervention (Pre-Post Test).

Table 4 Knowledge before and after media intervention.

Variable	Video Groups Mean±SD	Leaflet Group Mean±SD	*ò!! úaĭšḅ*
Knowledge PreTest	8.27± 3.4	8.37±4.0	0.895
Post Test Knowledge	16.80±2.4	16.84±2.5	0.890

Based on the table 4, it is known that the average result of the level of knowledge before receiving media intervention in the video media group is higher at 8.27 compared to the leaflet media group which is 8.37. To see the difference in knowledge before receiving media intervention, a differential test was carried out using the Unpaired T Test and a p-value of 0.895 (p>0.05) was obtained, which means that there was no significant difference in knowledge in the video media group and the leaflet media group. So it was concluded that the level of knowledge in both groups was the same and a comparative test or difference test was carried out.

Based on the table 4, it is known that the average result of the level of knowledge after receiving media intervention in the video media group is higher at 17.69 compared to the leaflet media group which is 17.24. To see the difference in knowledge after receiving media intervention, a differential test was carried out using the Mann Whitney test and a p value of 0.890 (p>0.05) was obtained, meaning that there was no significant difference in the level of knowledge in the video media group and the leaflet media group after receiving media intervention.

2. Knowledge Enhancement (Pre-Post Test).

Table 5 Increased knowledge of Video and Leaflet groups.

Group	Pre Test Mean±SD	Post Test Mean±SD	*p-value*
Video	8.27± 3.4	16.80±2.4	0.000
Leaflets	8.37± 4.0	16.84±2.5	0.000

Based on table 5 above, it is known that the average level of knowledge in the video media intervention group increased by 8.53 points. To see the difference in the level of knowledge before and after receiving the video media intervention, a difference test was carried out using the *Wilcoxon* statistical test and a *p-value* of 0.000 (p< 0.05) was obtained, which means that there was a significant difference in the level of knowledge before and after receiving the video media intervention.

Based on the table 5, it can be seen that the average level of knowledge in the leaflet media group has increased by 8.47. To see the difference in the level of knowledge before and after receiving the leaflet media intervention, a difference test was carried out using *the Wilcoxon* statistical test and a *p-value* of 0.000 (p<0.05) was obtained, which means that there was a significant difference in knowledge before and after the leaflet media intervention. It can be concluded that video media and leaflets are effective in increasing the knowledge of research respondents.

3. The Difference in the Effectiveness of Videos and Leaflets in Increasing Knowledge.

Based on Table 6, the differential test of the effectiveness of video media and leaflets, the data on the change in knowledge value from pre-test knowledge score to post-test was calculated by calculating the post test

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score minus the pre-test score. It can be seen that the average change in knowledge score in the video group is 8.53 points higher than the average change in knowledge score in the leaflet group, which is 8.47. From the results of the Mann-Whitney test, a p value of 0.780 (p > 0.05) was obtained, which means that there was no significant difference in the change in knowledge in the video group and the leaflet group or it can be concluded that video media and leaflet media have the same effectiveness in increasing knowledge about breast self-examination.

Table 6 Differences in the effectiveness of Videos and Leaflets.

Variable	Video Groups Mean±SD	Leaflet Group Mean±SD	*p-value*
Increased Knowledge	8.53± 3.2	8.47±3.8	0.869

4. Effect Size Media Intervention

Effect size is a statistical measure used to determine how much of an intervention is affected. In this study, the effect size was calculated to see the increase in the knowledge of participants in each group (videos and leaflets) after being educated using different media. Calculation of effect size using Cohen's formula.

$$d = \frac{M_{post} - M_{pre}}{SD_{spooled}} \quad \text{and SD} = \frac{SD^2_{post} - SD^2_{pre}}{2}$$

The effect size in the group was calculated by subtracting the average knowledge of post test and pre test then divided by the results of the calculation of elementary or standard deviation. So that the efeect size of the media is obtained.

$SD_{Video} = \frac{2.4^2 + 3.4^2}{2} = 2.942$ so that ,

$d_{video} = \frac{16.80 - 8.53}{2.942} = 2.89$ and

$SD_{Leaflet} = \frac{2.5^2 - 4.0^2}{2} = 3.335$ so that,

$d_{leaflet} = \frac{16.84 - 8.37}{3.335} = 2.54$

Cohen's values d = 2.89 (video) and 2.54 (leaflet) fall into the large category. This shows that both educational mediums are very effective in improving students' knowledge, although statistical tests between groups did not show significant differences.

Discussion

Age of Respondents

All respondents came from the same class, namely class VIII (eight), but the respondents had different ages. The age range of respondents was 13 to 15 years old, 13 years old as many as 30 (29.4%) respondents, 14 years old as many as 63 (61.7%) respondents, and 15 years old as many as 9 (8.9%) respondents. Based on the results of Mann-Whitney's statistical test on the age of respondents in the video media group and the leaflet media group with a value of p 0.220 (p >0.05), it was concluded that there was no significant difference in the age of the respondents in the video group and the age of the respondents in the leaflet group.

Age is a unit of time used to measure the time of the existence of an object or living thing in the world. In the age range of respondents, namely the age of 13 -15 years is the age range in adolescents where a person's knowledge is very easily influenced by other people and the surrounding environment. As a person ages, the person can be considered wiser in making decisions and have more experience so they are considered more technically capable. In addition, age can affect a person both in the way of thinking and acting. The older a person is, the more information can be gleaned from everyday experience (Yuatati & Afriani, 2024).

Access Information

Lack of knowledge about breast self-examination can be caused by a lack of information obtained. Of all the research respondents, as many as 63 (61.7%) respondents had never accessed health information about breast self-examination. Respondents who have accessed health information about breast self-examination are 39 (38.2%).

The existence of information about breast self-examination and breast cancer is a motivation for women to increase their knowledge about the breast area. This is the main basis for increasing knowledge about breast self-examination. The increasing level of knowledge about breast self-examination will influence women's behavior to realize the importance of breast self-examination to prevent breast

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cancer risk. This increases women's awareness, especially in early adulthood, to motivate themselves to practice in-person breast exams (Ajeng, 2018).

Video Effectiveness

In the experimental group that received video media intervention, the average group knowledge before receiving the intervention was 8.27 and experienced an increase in the average group knowledge after receiving media intervention to 16.80. The results of this study showed that there was a significant difference in the level of knowledge before and after the breast self-examination of respondents who received the video media intervention about the breast self-examination. This is evidenced by the p-value value in the Wilcoxon test of 0.000 (p< 0.05) and seen from the change in the average knowledge score before and after the intervention (post test - pre test) of 8.53 points. It can be concluded that video media is effective in increasing knowledge about breast self-examination in respondents or junior high school students. The results of this study are in line with research conducted by Siti (2023) on the effectiveness of video media in increasing knowledge about bra selection and about breast examination behavior in Ma'arif Kebunrejo Genteng Junior High School students who concluded that video media has a fairly high effectiveness in increasing respondents' knowledge.

Video media is a media that displays moving images, writing and audio or sound that explains the displayed image. The use of video media about breast self-examination can clarify the importance of breast self-examination that must be done, and clearly see practical steps about breast self-examination. One of the reasons for this increase in knowledge is the use of video media in conveying information clearly and interestingly because respondents not only see but also hear (Devi & Warsiti, 2023).

Leaflet Effectiveness

The knowledge of the leaflet media experiment group before receiving the intervention had an average of 8.37 and increased after receiving the leaflet media intervention to 16.84. The results of the knowledge level test before and after receiving the leaflet media intervention, using the Wilcoxon test with a value of p 0.000 (p<0.05) showed that there was a significant difference in the level of knowledge of respondents about breast self-examination before and after receiving the leaflet media intervention. This result can also be seen from the increase in the average knowledge score about breast self-examination before and after the leaflet media intervention by 8.47 points. It can be concluded that leaflet media is effective in increasing knowledge about breast self-examination in respondents or junior high school students.

The results of this study are in line with research conducted by Leli Safitri (2024) on the effectiveness of health education through leaflet media for the level of anemia knowledge of adolescent girls at SMPN 8 Satap Mantewe which concluded that leaflet media is effective in increasing adolescent girls' knowledge about anemia. The results of this study also conclude that the advantage of leaflet media is the compact form of media(Yuatati & Afriani, 2024).

Leaflet media is one of the print media that is simple and concise in containing information so that it is effective to carry everywhere and can be read anytime when needed. This increase in knowledge is influenced by the use of leaflet media because it makes respondents more active in reading so that the information obtained is easier to remember (Lestari et al., 2021).

The results of this study show that there is an increase in knowledge through health promotion with video media and leaflet media. In accordance with Lawrence Green's theory which states that health promotion will have an effect on the level of knowledge. Knowledge is the result of human sensing or the result of a person's knowledge of information through the five senses that he has. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste and touch. The more the five senses are used, the more knowledge is gained (Puspitasari et al., 2023).

Knowledge that covers the cognitive side has 6 levels, namely knowing, understanding, applying, analyzing, synthesizing, and evaluating. The level of cognitive knowledge that has been achieved by the respondents of this study is the level of knowledge and understanding. In this study, respondents' knowledge was channeled through their sense of sight and

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hearing in the video media group, while in the leaflet group only used their sense of sight. According to Edgar Dale, the senses that transmit the most knowledge to the brain are the eyes at 75%-87% while the other 13% to 25% is transmitted through other senses. It can be concluded that visual media facilitates the delivery and receipt of health information (Baswedan & Listiowati, 2019).

The Difference in the Effectiveness of Video Media and Leaflets in Increasing Knowledge

From the data analysis, it was found that the average change in knowledge score in the video group was 8.53 higher than the average change in knowledge score in the leaflet group which was 8.47. In Mann-Whitney's statistical test on the change in knowledge between the video group and the leaflet group, a value of p 0.869 (p > 0.05) was obtained, which means that there was no significant difference in the increase in knowledge between the video group and the leaflet group. It can be concluded that video media and leaflet media have the same effectiveness in increasing knowledge about self-breast examination in junior high school students with the largest average increase in knowledge in the video group. The lack of significant difference may be attributed to both media being sourced from the Ministry of Health and containing similar content, making them equally impactful in delivering educational messages.

The video media group had the largest average rating, with a difference of 0.06 points between the average rating of the video group and the leaflet. It can be concluded that the increase in knowledge about breast self-examination in the video group is higher than the leaflet group in junior high school students in Semarang City.

The results of this study are in line with Greiny's (2022) research on the effectiveness of video media and leaflets at the level of knowledge about menstrual hygiene at MA Darul Ulum Palangkaraya, which proves that video media is slightly higher in increasing knowledge about menstrual hygiene in young women compared to leaflet media. However the results of statistical tests show that there is no difference in the two media because videos and leaflets are both good at increasing knowledge (Arisani, 2017).

In line with Edgar Dale's theory which explains a person learns more than 50% is from what he sees and hears. In health promotion, it is very closely related to the selection of media aids with the aim of helping the use of the senses as much as possible. This reflects that in increasing knowledge and information absorption in a person, it will be more effective if they use the senses as possible. The selection of media in conveying information about breast examination itself is expected to increase understanding and change knowledge among adolescent girls (Maulidia et al., 2022).

Conclusion and Recommendations

There was a difference in knowledge about breast self-examination before and after the intervention of video media and leaflets, so it can be concluded that video media and leaflets are effective in increasing respondents' knowledge about breast self-examination. Video media gets a higher average increase in knowledge compared to leaflet media. However, from the test results, it was concluded that there was no difference in effectiveness between videos and leaflets in increasing respondents' knowledge. Videos and leaflets can be equally effective in increasing knowledge about self-examination in adolescents.

It is hoped that this study can be developed by adding bound variables in the form of attitudes and practices of breast examination itself or by combining other health promotion methods such as lectures and demonstrations. Schools are encouraged to utilize either video or leaflet media in health education classes. Integrating these materials into the curriculum may improve breast health awareness among adolescents. For the Indonesian Ministry of Health and the creators of health education media, it is hoped that they can compile information material that is interesting and relevant to the target and can determine the type of media that is effective in conveying messages to the target.

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