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ORIGINAL ARTICLE

THE EFFECTIVENESS OF CADRE TRAINING USING CANCER EDUCATIONAL VIDEOS ON KNOWLEDGE AND SELF-EFFICACY

Catur Kurniawan[1, 2], Haryani Haryani[3], Christantie Effendy[3]*

1. Magister of Nursing Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia
2. Department of Nursing, Faculty of Nursing, Universitas Alma Ata, Yogyakarta, Indonesia
3. Department of Medical Surgical Nursing, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

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***Corresponding Author**
Christantie Effendy
christantie@ugm.ac.id

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ABSTRACT

Patients with cancer are at risk of death. There has been a lack of research on cancer-related training for health cadres. Meanwhile, they can potentially prevent cancer deaths because of their proximity to the community. This study aimed to determine the effectiveness of cancer educational videos on cadres' knowledge and self-efficacy in Yogyakarta. This was quasi-experimental research with a nonequivalent control group design. The purposive sampling technique was used to obtain data from 61 health cadre respondents. The inclusion criteria: older than 19 years old, a woman, and uses WhatsApp. The Cancer Knowledge and General Self-Efficacy Scale Questionnaires measurement instruments were used. Data analysis was conducted using an independent sample t-test, repeated ANOVA, and paired comparison post hoc. There was a significant difference in respondents' knowledge in the control and intervention groups ($p<0.05$). The intervention group's knowledge increased, and there was a moderate increase in knowledge in the control group. There was no significant change in cadres' self-efficacy in the intervention group ($p>0.05$), but there was a significant increase ($p<0.05$) in the control group. Therefore, cadres' training using cancer educational videos is effective for increasing cadres' knowledge only and not self-efficacy.

Keywords: *Cadres; cancer; knowledge; self-efficacy*

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INTRODUCTION

Cancer is the second leading cause of death after cardiovascular disease worldwide. In 2018, it was estimated that there were 18.1 million new cancer cases and 9.6 million deaths caused by cancer (World Health Organization, 2018). In Indonesia, cancer's prevalence is 136.2 per hundred thousand population. The Special Region of Yogyakarta had the highest cancer incidence among 34 provinces in Indonesia (Indonesian Ministry of Health, 2019).

Cancer may occur because of non-modifiable intrinsic risks and modifiable non-intrinsic risk factors (Wu et al., 2018). The risk factors for cancer include lifestyle factors, such as tobacco consumption, improper energy balance, which leads to obesity, an unhealthy diet, lack of physical activity, and excessive alcohol consumption (Arem & Loftfield, 2018). Grundy et al. (2016) reported that controllable factors and environmental risks cause 40.8% of cancer cases. Another study stated that the biggest contributors to the risk factors are tobacco use (15.1%) and excess body weight (6.3%) (Brown et al., 2018).

A person's knowledge of the risk factors for cancer plays a role in the prevention, early detection, and decision to seek cancer treatment (Elshami et al., 2020). Knowledge is related to myths and facts about cancer. Many myths about cancer in society are considered facts due to people's lack of understanding of the actual risk factors that cause cancer. These events can hinder the prevention, early detection, and treatment of cancer, which increases cancer incidence (Al-Azri, Al-Saadi, Al-Harrasi, & Panchatcharam, 2019).

The Health Belief Model theory explains that individuals will follow certain health actions because they feel vulnerable to certain conditions or diseases. In addition, these individuals believe that following these health measures can prevent them from contracting dangerous diseases (Norman & Conner, 2016).

Promotive and preventive actions, such as training on the early detection of cancer for health cadres, are one of the efforts implemented to control the increasing cancer incidence. Research about cancer generally focuses on one type of cancer and involves one group of health workers, for example, nurses only. However, nurses cannot always be able to educate people about cancer. Thus, cadres are expected to help educate society and develop follow-up plans related to public health (Indonesian Ministry of Health, 2014). Cadres' promotive and preventive efforts are hoped to prevent potential health problems in society (Solikhah et al., 2018). However, reports have found that most health cadres' knowledge regarding cancer, especially breast cancer, and its prevention and early detection, is in the low to moderate range (Yuhanah et al., 2019).

Next, self-efficacy has an essential role in early cancer detection and can improve health workers' confidence in carrying out their role (Sari et al., 2018). Knowledge and self-efficacy are correlated because knowledge is a factor that can increase a person's self-efficacy (Zamani-Alavijeh et al., 2019). Therefore, good knowledge, experience, and social support will increase the self-efficacy of cadres. The better the experience, social support, and knowledge of the cadres, the better their self-efficacy. Knowledge is the most dominant predictor factor (Rosdiana et al., 2018).

Kye et al. (2019) researched the effects of a cancer prevention education program on elementary school students' knowledge, attitude, self-efficacy, and intentions in South Korea. They discovered that educational interventions increased cancer prevention knowledge ($p = 0.005$). However, no effect was observed on self-efficacy ($p = 0.086$) To the best of our knowledge, studies focusing on cancer response training using educational videos and involving cadres as promotive and preventive agents are still not found in Indonesia. Therefore, this research investigated the effectiveness of educational videos during cadre training in Yogyakarta on their knowledge and self-efficacy related to cancer.

METHOD

Study design

This is a quasi-experimental study with a non-equivalent control group design.

Sample

This study was conducted in Yogyakarta from August to September 2021. The purposive sampling technique was used with the Lemeshow, Hosmer, Klar & Lwanga (1997) formula.

$$n = \frac{2\sigma^2(Z_{1-\alpha} + Z_{1-\beta})^2}{(\mu 1 - \mu 2)^2}$$

with σ: 2.28 (Purnamaningrum, 2011), $Z_{1-\alpha}$: 1% (2.326), $Z_{1-\beta}$: 1% (2.326), μ1-μ2: 2,78.

The total number of samples needed in this data collection was 29 respondents each for the intervention and control groups. The researchers added a 10% risk of respondents dropping out of the study. Therefore, the total sample for the intervention group was 33 respondents, and the control group was 33 respondents.

At the beginning, 40 respondents in the intervention group and 35 in the control group were willing to participate in the study. During the research, 11 respondents dropped out of the intervention group because they did not complete the pre-test (9 respondents), 1 respondent did not complete post-test I and II, and 1 respondent did not complete post-test II. In the control group, 3 respondents dropped out because 2 respondents did not complete post-test I and 1 respondent did not complete post-test II. Thus, the total sample was 61 cadres divided into two groups (29 in the intervention group and 32 in the control group).

The inclusion criteria included adult cadres (older than 19 years old), registered as cadres, female, able to speak the Indonesian language, can communicate well, have a mobile phone and WhatsApp application, and can read and write. Meanwhile, the exclusion criteria in this study were cadres with illness and physical weakness.

Instrument

A questionnaire about cancer knowledge developed by the researchers was used to determine the cadres' cancer knowledge. The questionnaire creation process is described below:

1. In the first stage, the researcher collected literature on the material used for the research instrument.
2. In the second stage, the researcher developed a cancer-related knowledge instrument.
3. Next, the researcher evaluated the validity of the content. A total of 30 questions showed essential results. The CVR value of the 30 item items shows CVR > 0.00, meaning 50% more than SME in the panel stating essential items (Azwar, 2019). The Content Validity Index (CVI) value is 0.95 (Essential). According to Davis in Azwar (2019) the recommended CVI value is 0.80, whereas Waltz et al. in Azwar (2019) state that the average CVI value for the conformity index standard is 0.90.
4. In the last stage, the researcher tested the construct validity and instrument reliability. Of the 30 question items on the knowledge questionnaire about the early detection of cancer, 27 items were declared valid and 3 invalid items (question numbers 1, 18, & 22). The 27 valid items with the lowest range of r-count values are 0.164 up to the highest calculated r-value of 0.586. According to Halin (2018), if the r-count value > r table or p-value <0.05, then the item items in the questionnaire are declared valid and if the r-count value <r table or p-value > 0.05, then the item items in the questionnaire are declared invalid. The results of the reliability test of the 27 question items on the cancer knowledge questionnaire obtained Cronbach alpha values of 0.658 > 0.60. Therefore, it can be concluded that this instrument has good reliability.

A general self-efficacy questionnaire was used to determine the cadre's self-efficacy. The self-efficacy instrument was developed by Schwarzer and Jerusalem (1995). This questionnaire has been adapted to Indonesia's language and context, and back-translation was conducted. Novrianto, Marettih, and Wahyudi (2019) state that the instrument's t-value is > 1.96 or positive, indicating that this general self-efficacy scale is valid.

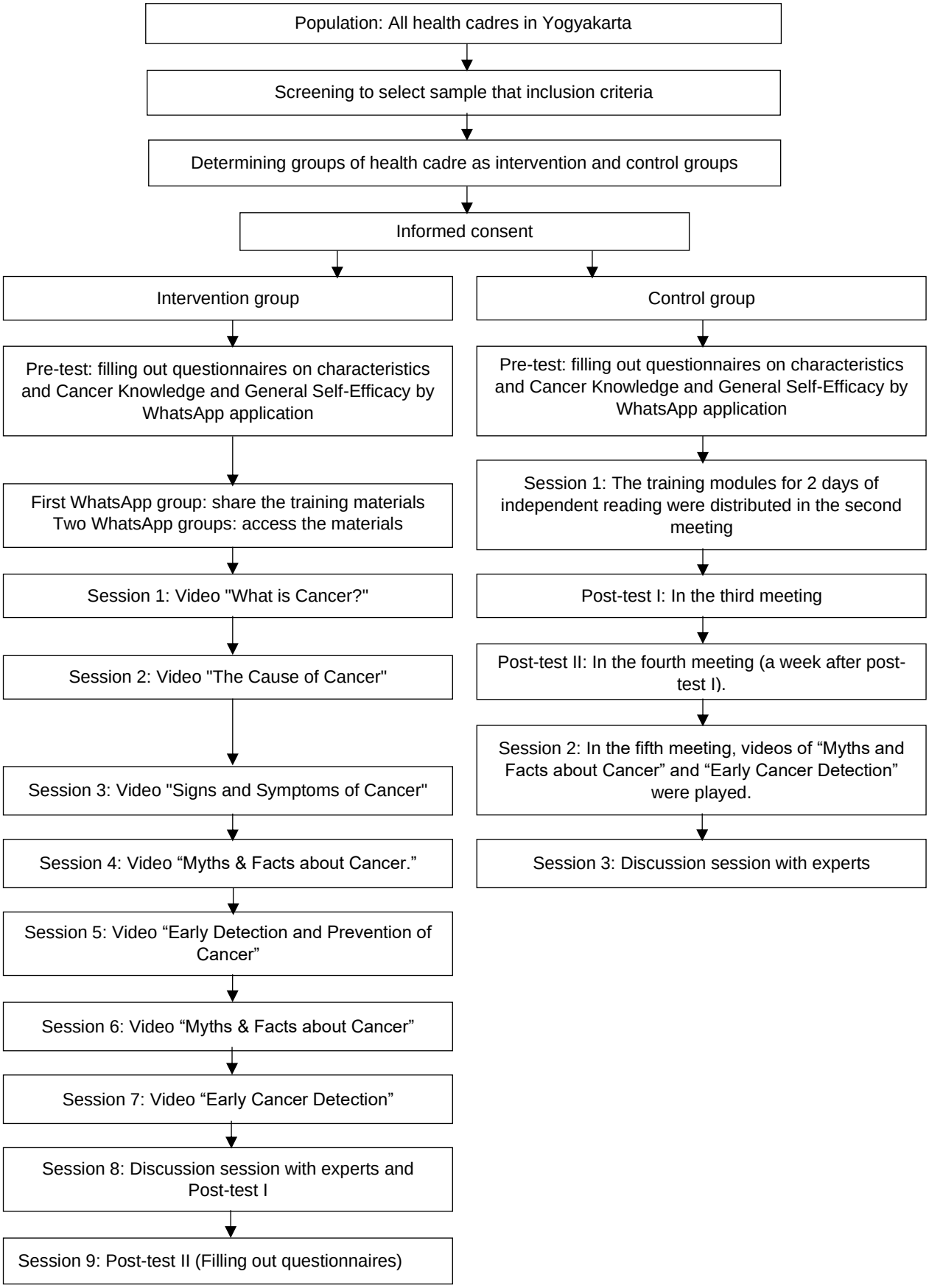

Figure 1. Flowchart study

Data collection and intervention

The data were collected by WhatsApp using a questionnaire about Cancer Knowledge and a General Self-Efficacy Questionnaire. In the intervention group, two WhatsApp groups were created. The first WhatsApp group was used to share the training materials, and the second WhatsApp group was for discussions. Two WhatsApp groups were created so the respondents could easily access the materials. The intervention was conducted for 9 consecutive days through WhatsApp. Each meeting was held for 4 hours, from 2 p.m. to 6 p.m. The first meeting's agenda comprised an introduction, having the respondents fill in the informed consent forms and the pre-test. During the first part of the second meeting, we discussed "What is Cancer?" Then, in the second, third, and fourth meetings, the following topics were discussed: "The Cause of Cancer," "Signs and Symptoms of Cancer," and "Myths & Facts about Cancer." Then, the "Early Detection and Prevention of Cancer" topic was presented in the fifth meeting. The educational videos with topics "Myths & Facts about Cancer" and "Early Cancer Detection" were played in the sixth and seventh meetings. Lastly, in the eighth meeting, there was a discussion with experts. In this meeting, post-test I was also conducted, while post-test II was done in the ninth meeting or a week after the first post-test.

In the control group, the first meeting's agenda comprised an introduction, having the respondents fill in the informed consent forms and the pre-test. The training modules for 2 days of independent reading were distributed in the second meeting. Post-test I was done in the third meeting, while post-test II was done in the fourth meeting (a week after post-test I). In the fifth meeting, videos of "Myths and Facts about Cancer" and "Early Cancer Detection" were played. Then, the group had a discussion session with experts.

Ethical considerations

This study had obtained a research ethics feasibility permit from the Research Ethics Committee of the Faculty of Medicine, Public Health and Nursing UGM Yogyakarta with Ref No: KE/FK/0168/EC/2021 and a research permit from the Sleman District Health Office with No: 070/333.

Data analysis

The data were processed using the independent sample t-test, the Repeated Measure ANOVA test, and the post hoc test through a computer program.

RESULTS

Respondents' Characteristics

The respondents in the intervention and control groups were aged 50 or lower. Most of them completed their high school education, were unemployed, earned less than the minimum wage in Sleman Regency, had no relatives who had cancer, and had no history of attending a training session about cancer. In the intervention group, most respondents had been health cadres for more than five years, while those in the control group were health cadres for less than a year (Table 1).

Category	Intervention (n = 29)	Control (n = 32)	*p*-value
	n (%)	n (%)	
Respondent age			
• < 50 years	19 (65.5)	28 (87.5)	0.36
• > 50 years	10 (34.5)	4 (12.5)	
Education			
• Primary school	2 (6.9)	2 (6.3)	0.18
• Junior high school	4 (13.8)	7 (21.9)	
• Senior high school	18 (62.1)	15 (46.8)	
• Diploma	1 (3.4)	6 (18.8)	
• Bachelor	4 (13.8)	2 (6.3)	
Profession			
• Work	7 (24.1)	6 (18.8)	0.49
• Does not work	22 (75.9)	26 (81.2)	
Wage			
• < Sleman Regency Minimum Wage Rp1.903.500	25 (86.2)	28 (87.5)	0.40
• ≥ Sleman Regency Minimum Wage	4 (13.8)	4 (12.5)	
History of relatives suffering from cancer			
• No	21 (72.4)	25 (78.1)	0.85
• Yes	8 (27.6)	7 (21.9)	
Length of time being a health cadre			
• < 1 year	7 (24.1)	11 (34.4)	0.15
• 1-3 year	9 (31.0)	6 (18.8)	
• 3- 5 year	3 (10.3)	8 (25.0)	
• > 5 years	10 (34.5)	7 (21.9)	
History of getting cancer training			
• Yes	9 (31.0)	11 (34.4)	0.35
• No	20 (69.0)	21 (65.6)	

Homogeneity test (Levene test)

The homogeneity test on the respondents' characteristics revealed no difference between the control and intervention groups. Therefore, the respondents' characteristics are homogeneous because each aspect has a p-value greater than 0.05.

Table 2. The effects of educational video training on cadres' knowledge (n = 61)

Variable	Group	Intervention (n = 29)		Control (n = 32)	
		Mean (SD)	*p*-value	Mean (SD)	*p*-value
Knowledge	Pre	19.41 (3.11)	<0.001*	20.19 (2.59)	0.004*
	Post I	22.89 (2.35)		21.91 (2.88)	
	Post II	23.07 (2.60)		21.47 (2.95)	

*Paired-wise comparison test (Bonferroni), *Significant p<0.05*

As shown in Table 2, there is a significant difference between the intervention and control group knowledge measured in the pre-test, post-test I, and post-test II. In the intervention group, the p-value was 0.001 and the p-value of the control group was 0.004.

Table 3. The posthoc test results of cadres' knowledge (n = 61)

Variable	Group	Intervention (n = 29)			Control (n = 32)		
		Mean difference	p-value	d	Mean difference	p-value	d
Knowledge	Pre-post I	-3.48	<0.001*	1.3	-1.72	0.003*	0.6
	Pre-post II	-3.65	<0.001*	1.3	-1.28	0.009	0.5
	Post I-post II	-0.17	1.00	0.07	0.44	0.66	-0.15

*Paired-wise comparison test (Bonferroni), *Significant p<0.05*

Table 3 shows that there was a knowledge difference in the intervention group in pretest-posttest I and pretest-posttest II p<0.05 with a Cohen (d) value of 1.3. This result suggests that there was an effect as the knowledge score increased. In the control group, the knowledge difference was found in pretest-posttest I and pretest-posttest II p<0.05 with a Cohen (d) value of 0.6 and 0.5. This result indicates that there was a moderate effect from the knowledge increase. However, the posttest I - posttest II results in the intervention and control groups showed no significant knowledge difference, p>0.05.

Table 4. The effects of educational video training on cadres' self-efficacy (n = 61)

Variable	Group	Intervention (n = 29)		Control (n = 32)	
		Mean (SD)	*p*-value	Mean (SD)	*p*-value
Self-efficacy	Pre	39.86 (3.81)	0.54	41.72 (6.05)	0.025*
	Post I	39.31 (5.51)		41.06 (5.71)	
	Post II	38.62 (5.99)		42.75 (5.54)	

*Repeated ANOVA test, *Significant p<0.05*

Table 4 shows that there was no significant difference in self-efficacy in the intervention group (p>0.05). Meanwhile, in the control group, there was a significant difference in self-efficacy (p<0.05).

Table 5. The posthoc test results on cadres' self-efficacy (n = 61)

Variable	Group	Intervention (n = 29)			Control (n = 32)		
		Mean difference	p-value	d	Mean difference	p-value	d
Self- efficacy	Pre-post I	1.26	1.00	-0.11	0.66	1.00	-0.11
	Pre-post II	0.45	1.00	-0.25	-1.03	0.95	-0.11
	Post I-post II	0.63	0.85	-0.12	-1.69	0.02*	0.3

*Paired-wise comparison test (Bonferroni), *Significant p<0.05*

As shown in Table 5, the intervention group in pre-test-post-test I, pre-test-post-test II, and post-test I-post-test II did not show any difference or increase in self-efficacy. In the control group, the difference and increase in self-efficacy was seen in post-test I-post-test II. Meanwhile, the pre-test-post-test I and pre-test-post-test II showed no difference or increase in self-efficacy.

Table 6. The differences between the intervention and control groups' knowledge about early detection, myths, and facts about cancer (n = 61)

Variable	Group	n	Mean (SD)	*p*-value
Knowledge	Pre intervention	29	19.41 (3.11)	0.29
	Pre control	32	20.19 (2.59)	
	Post I intervention	29	22.89 (2.35)	0.15
	Post I control	32	21.91 (2.88)	
	Post II intervention	29	23.07 (2.60)	0.03*
	Post II control	32	21.47 (2.95)	

*Independent sample t-test, *Significant p<0.05*

Table 6 shows that there was no significant difference in pre-test scores between the intervention group and the control group as the p-value was 0.29 (p>0.05). Meanwhile, the post-test I values between the intervention and the control groups showed a difference based on the average value. The average value of the intervention group was 22.89, and the value of the control group was 21.91. However, in terms of significance level, there was no significant difference with p = 0.15 (p>0.05). Additionally, the values obtained in post-test II by the intervention and control groups showed a significant difference in knowledge p = 0.03 (p<0.05).

Table 7. The differences between the intervention group and control groups' self-efficacy (n = 61)

Variable	Group	N	Mean (SD)	p-value
Self- efficacy	Pre intervention	29	39.86 (3.81)	0.16
	Pre control	32	41.72 (6.05)	
	Post I intervention	29	39.31 (5.51)	0.23

Variable	Group	N	Mean (SD)	p-value
	Post I control	32	41.06 (5.71)	
	Post II intervention	29	38.62 (5.99)	0.007*
	Post II control	32	42.75 (5.54)	

*Independent sample t-test, *Significant p<0.05*

Table 7 indicates that there was no significant difference in self-efficacy in the pre-test scores between the two groups, p = 0.16 (p>0.05). The p-value of post-test I between the intervention and control groups is p = 0.23 (p>0.05), meaning there is no significant difference. Meanwhile, the p-value of post-test II is p = 0.007 (p <0.05), which means that there is a significant difference in self-efficacy between the intervention and control groups.

DISCUSSION.

Education for the community regarding the importance of cancer prevention and risk has been widely conducted in Indonesia. However, intensive training using modules and videos for health cadres about cancer and conducting early examinations is rarely done. This study proves that such training improves cadres' knowledge and understanding of cancer. Moreover, the training provided more details on conducting an early self-examination and knowing the difference between myths and facts.

The results obtained after providing training for cancer cadres using educational videos revealed that there is a significant knowledge difference in the intervention and control groups (p<0.05) before and after training (pre-test-post-test I and pre-test-post-test II). The intervention group experienced a significant increase in knowledge, and the control group experienced a moderate increase in knowledge. This increase in knowledge aligns with the research by Silalahi et al., (2018), which showed that audio-visual media and booklets effectively increase knowledge with a p-value of <0.001. Wolf et al., (2020) also found that the intervention using educational videos increased respondents' knowledge (p ≤ 0.001).

Knowledge can be gained through the senses: sight, hearing, smell, taste, and touch (Notoatmodjo, 2014). It can also be interpreted as a collection of experiences, information, and insights that a person can use to predict and integrate new experiences and information (Mohajan, 2016). Interventions with educational videos about cancer can increase cadres' enthusiasm for training about the importance of cancer prevention and its risks. This enthusiasm can encourage cadres to listen to the explanations and watch the displayed videos. Therefore, the knowledge of the intervention group increased.

Most of this study's respondents never attended training on cancer. Hence, this research taught the respondents about early cancer detection and myths and facts about breast, cervical, and ovarian cancers. Their knowledge about these aspects was developed. This study's results align with a study by Niman et al., (2021), where the training intervention provided a significant change or improvement in the respondents' knowledge than before the training was conducted (p-value = 0.001). Training sessions aim to provide coaching and develop the capabilities of human resources to improve and meet the expected goals (Sugandhi, 2016).

The training intervention the researchers conducted was equipped with educational audiovisual media. This media type was used as a communication method and tool in the learning process. When used in communication, it can deliver the message more clearly to the audience. Moreover, it is a good tool for explaining, can overcome the limitations of space and time, is more realistic, and can be repeated or stopped at any time (Susilana & Riyana, 2013).

This study showed a significant difference between the intervention and control groups regarding knowledge obtained in post-test II (p<0.05). This result indicates that the intervention provided an effective impact to increase knowledge. Therefore, although the training was conducted online without face-to-face meetings due to restrictions on community activities, health cadres could still gain knowledge about cancer through educational videos.

Furthermore, this study found no significant difference in self-efficacy in the intervention group (p>0.05). These results do not align with the research conducted by Sutarjo et al., (2016). Their research found that the training conducted about community mental health nursing significantly influences the cadre's self-efficacy. Moreover, a study conducted by Indrianingsih et al., (2020) also found that health education could increase caregivers' self-efficacy (p<0.05).

However, training interventions do not always have the same impact on self-efficacy. Capron Puozzo & Audrin (2021) provided training where respondents had to present an analysis of French texts creatively and found that the training did not have a significant impact on self-efficacy. However, respondents reported having a better general understanding and were more familiar with the topic after the intervention. \ Another study by Kye et al., (2019) focused on cancer prevention education in elementary school students. They provided an intervention in the form of watching a music video about cancer prevention during two 40-minute sessions. The results showed that the respondents' self-efficacy did not increase, but there was a significant increase in the knowledge variable. These results may be due to the duration of the educational intervention, which may be too short for a significant change in the self-efficacy variable.

Self-efficacy is a person's belief to produce something that is targeted. Thus, it can influence events and affect one's life. Good self-efficacy can increase a person's achievement and well-being. It can also make one's belief firmer that a difficult task is a challenge rather than a threat that must be avoided. Self-efficacy can be changed through some activities, such as training (Ardiyanti and Alsa, 2015). Self-efficacy can be formed through four sources: the experience of successfully performing a task or overcoming a problem, the experience of others/modeling through observation of the success of others, verbal persuasion, and physiological conditions and moods. Self-efficacy can improve because of the experiences that an individual has gone (Juwel and Ahsan, 2019).

In this study, the intervention group did not experience a significant increase in self-efficacy. The pre-test score was 39.86, the post-test I score was 39.31, and the post-test II score was 38.62. Therefore, the cadres' increase in knowledge did necessarily improve their self-efficacy. The increased knowledge made the respondents realize they had no adequate knowledge, decreasing their self-efficacy. However, it should be noted that the training provided was

only limited to verbal persuasion, which was shown through interesting educational videos and discussions with experts. The respondents had not conducted their duties as cancer response cadres who do health promotions about cancer response in the community.

In terms of limitations, the village selection for this study was not randomized. Due to the COVID-19 pandemic and the restrictions on community activities, several villages refused to participate in the research. Therefore, purposive sampling was used to collect samples from a village willing to participate and meet the inclusive and exclusive criteria.

CONCLUSION AND RECOMMENDATION

Providing educational videos during cancer training effected cadres' knowledge. After the intervention, their knowledge increased, but there was no effect on cadres' self-efficacy. Therefore, educational videos can improve the cancer knowledge of health cadres.

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