

ORIGINAL ARTICLE

The Effect of Multimedia Education to Improve Knowledge and Self-efficacy of COVID-19 Prevention Among Pregnant Women in Indonesia

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ABSTRACT

Introduction: The health of pregnant women as a high-risk group is a concern, especially during the pandemic. The Maternal Mortality Rate increases every year due to the low mothers' knowledge about the high risk of pregnancy. Knowledge and self-efficacy of pregnant women must be increased so that they have good pregnancy self-management abilities. One of the interventions is health education based on audiovisual media that can be accessed independently without having to frequently visit health care facilities. **Methods:** The study design used was a quasi-experiment with pre and post-test with a control group. The sample consisted of 18 pregnant women for each intervention and control group through the total sampling technique. This study was conducted in the work area of the Mantok Public Health Center, Banggai Regency in March-April 2021. The research instrument used was a knowledge questionnaire (0.812) and self-efficacy (0.655). The intervention provided was audio-visual media-based health education. **Results:** There is an effect of audiovisual media on knowledge of COVID-19 prevention (p value = 0.021), but there is no effect on self-efficacy (p value = 0.296). **Conclusion:** Audiovisual media is an alternative solution in providing health education during the pandemic in increasing knowledge and integrated efficacy with maternal health programs in health care facilities.

Keywords: Audiovisual media, COVID-19, Knowledge, Prevention, Self-efficacy

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INTRODUCTION

Physical and spiritual well-being, especially that of pregnant women, is the most essential aspect of human life. In Central Sulawesi, the Maternal Mortality Rate (MMR) has fluctuated over the last 5 years to 208/100,000 live births in 2019 (1). In Banggai Regency in 2018, it was ranked 1st with the 10 highest maternal mortality cases (1). Meanwhile, in 2019 there were 5 cases of maternal deaths. MMR in Banggai Regency is still high every year. This figure has not met the Sustainable Development Goals (SDGs) targets, namely MMR of 70 per 100,000 live births.

Low of pregnant women's understanding about high risk in pregnancy is one of the indirect causes of

the MMR, along with disease. This makes pregnant women often late in making decisions to prevent pregnancy complications, especially during the COVID-19 pandemic. The increase in maternal mortality can be controlled by increasing maternal knowledge and self-efficacy among pregnant women.

Maternal self-efficacy is one of the many psychological factors and also an indicator to predict maternal behavior and increase maternal confidence and abilities throughout pregnancy. Self-efficacy can be said to be a trigger for pregnant women to take action to achieve the desired goals. Someone who has Self Efficacy will be able to build a good emotional condition and also be conducive for her to face the problems that exist in her life (2).

People are affected by the COVID-19 pandemic because they are reluctant to access health care, particularly maternal and neonatal services, out of fear of contracting the virus themselves. During the

COVID-19 pandemic, pregnant women need to visit and check Antenatal Care (ANC) regularly to prevent and detect complications in pregnant women, complications of pregnancy, and childbirth. These complications can be prevented by pregnant women through routine and regular pregnancy checks.

Pregnant women need to be informed of the risks of the COVID-19 pandemic so they can take precautions to protect their unborn children and themselves to undergo the New Normal Era, namely making changes to the cognitive aspect by providing education through audiovisual media. Audio-visual media is media that contains elements of images that can be seen and elements of sound that can be heard, for example, films, videos, or others. The previous study (3) revealed that there was a significant influence of audiovisual media on mothers' knowledge and attitudes about Early Breastfeeding Initiation (IMD) at the Tinggimoncong Public Health Center with p-values of 0.000 and 0.023.

Similar to research by (4), it was found that health education with audiovisual media and guideline books was more effective in improving knowledge and self-efficacy of breastfeeding among mothers compared with giving the module ones with a score of knowledge values before treatment between the two relative groups. the same ($p > 0.05$). After treatment, both groups experienced an increase, with a significant p-value of 0.00 ($p < 0.05$). The score of self-efficacy before treatment between the two groups obtained a significance value ($p > 0.05$). Compared with the control group, the treatment group has a knowledge value higher. This difference was statistically significant ($p < 0.05$). This study aims to identify the influence of counseling using audio-visual media on knowledge and self-efficacy in pregnant women.

MATERIALS AND METHODS

This study employed a quasi-experimental approach, consisting of a pre- and post-test with a control group design. The research population was 36 pregnant women in the I, II, and III trimesters at the Mantok Health Center, Banggai Regency, Central Sulawesi. Total sampling yielded a sample size of 18, with 9 women in each of the intervention and control groups. With the inclusion criteria, namely pregnant women in the I, II, and III trimesters in the Mantok Public Health Center area, can read and understand the Indonesian language and have smartphones. The exclusion criteria were pregnant women with psychological disorders and pregnant women who did not complete the study. The independent variable is health education using audio-visual. The dependent variable is knowledge about efforts to prevent COVID-19 and maternal self-efficacy.

This study used a questionnaire about efforts to prevent COVID-19 as many as 14 statements and maternal self-efficacy about behaviors that support the health of pregnant women in pregnancy care during the new normal era with 15 statements. All respondents filled out the questionnaire as a pre-test. The research sample was divided into the intervention and control group. Health education was provided to the Intervention Group using audio-visual media and to the Control Group via slide media. After conducting health education at an interval of 5 days the researchers distributed the questionnaires again with the same number of statements as the post-test. Data analysis used Wilcoxon test and Mann-Whitney test. This research has received research ethics approval from the Health Research Ethics Committee of the Health Polytechnic of the Semarang Ministry with Number: 043/EA/KEPK/2021.

RESULTS

Pregnant women characteristics

From table I, it can be seen that most of the respondents are aged 20-35 years, namely 13 respondents or 72.2%. And the researchers grouped the respondents' last education into 5 namely elementary school, junior high, senior high school, diploma three, and bachelor. From the table, it can be seen that the most of respondents' last education was high school as many as 18 respondents (50%).

Knowledge about COVID-19 prevention among pregnant women

Table II shows that the score of the knowledge level of the intervention group (audio-visual media) before intervention was mostly sufficient, as many as 12 respondents (66.7%). Meanwhile, after intervention was mostly good, as many as 16 respondents (88.9%). In the control group before being given counseling using slide media, most of the respondents got good results (72.2%) with 13 respondents. And after counseling the control group got the results that most of the respondents scored enough (72.2%) with a total of 13 respondents.

Self-Efficacy about pregnancy care among pregnant women

Table III shows that at the time of the pretest in the intervention group (audio-visual media) most of them got high results, namely (50%) or 9 respondents. And at the time of the post-test, most of them got high results, namely (83.3%) as many as 15 respondents. While in the control group during the pretest, most of them got high results, namely (88.9%) as many as 16 respondents and at the time of post-test, most of them got high results, namely (88.9%) as many as 16 respondents.

Table I : Characteristics of pregnant women based on age and education at the Mantok Health Center, Banggai Regency, Central Sulawesi in 2021 (n=36)

Characteristics	Intervention		Control	
	f	%	f	%
Age				
<20 years old	2	11.1	0	0
20-35 years old	13	72.2	13	72.2
>35 years old	3	16.7	5	27.8
Education				
Elementary school	4	22.2	2	11.1
Junior high school	2	11.1	3	16.7
Senior high school	9	50	9	50
Diploma Three	1	5.6	0	0
Bachelor	2	11.1	4	22.2
Total	18	100	18	100

Table II : Distribution of the frequency of knowledge about COVID-19 prevention before and after intervention between the intervention group and control group among pregnant women

Knowledge	Intervention				Control			
	Pre-test		Post-test		Pre-test		Post-test	
	f	%	f	%	f	%	f	%
Good (67-100%)	6	33.3	16	88.9	13	72.2	13	72.2
Sufficient (66-33%)	12	66.7	2	11.1	5	27.8	5	27.8
Deficient (<33%)	0	0	0	0	0	0	0	0
Total	18	100	18	100	18	100	18	100

Differences in health education using audio-visual media on knowledge of pregnant women

Table IV explained the results before and after intervention, the knowledge measurement carried out was as follows: the p-value in the intervention group (audio-visual media) was 0.000 (<0.05) which means there is a significant difference in knowledge of efforts to prevent COVID-19 in the new normal era.

Differences in health education using audio-visual media on the self-efficacy of pregnant women

Table V shows the results before and after the self-efficacy measurement were carried out. It was as follows: the p-value in the intervention group (audio-visual media) was 0.001 (<0.05) which means there are differences in the increase in self-efficacy in the intervention group (audiovisual media).

Table III : Frequency distribution of self-efficacy about pregnancy care before and after intervention in the intervention group and control group among pregnant women

Self-Efficacy	Intervention Group				Control Group			
	Pre-test		Post-test		Pre-test		Post-test	
	f	%	F	%	f	%	f	%
High (67-100%)	9	50	15	83.3	16	88.9	16	88.9
Medium (66-33%)	9	50	3	16.7	2	11.1	2	11.1
Low (<33%)	0	0	0	0	0	0	0	0
Total	18	100	18	100	18	100	18	100

Table IV : Differences of knowledge about COVID-19 among pregnant women before and after intervention

Intervention	Mean	<i>p-value</i>
Pre-test	8.72	0.000
Post-test	10.83	

Table V : Differences of self-efficacy about pregnancy care among pregnant women before and after intervention

Intervention	Mean	<i>p-value</i>
Pre-test	9.11	0.001
Post-test	10.50	

Table VI : The effectiveness of audio-visual media on knowledge about COVID-19 prevention among pregnant women

Group	Mean	<i>p-value</i>
Intervention	22.36	0.021
Control	14.64	

Table VII : The effectiveness of audio-visual media on the self-efficacy about pregnancy care among pregnant women

Group	Mean	<i>p-value</i>
Intervention	16.75	0.296
Control	20.25	

The effectiveness of audio-visual media on knowledge about COVID-19 prevention among pregnant women

Table VI shows the results of measuring knowledge in the intervention group (audio-visual media) and the control group with a *p-value* of 0.021 (<0.05) which indicates that there is a significant difference in effectiveness in the intervention group and control group on knowledge about efforts to prevent COVID-19 among pregnant women.

The effectiveness of audio-visual media on the Self-Efficacy about pregnancy care among pregnant women

Table VII explained the results of self-efficacy measurements were carried out in the intervention group (audiovisual media) and the control group with a *p-value* of 0.296 (> 0.05) which indicates that there is no significant difference in effectiveness in the intervention group (audio media visual) and the control group on self-efficacy in pregnant women.

DISCUSSION**Characteristics of pregnant women**

The characteristics of the respondents in this research refer to table I which describes that most of pregnant women are aged 20-35 years, as many as 26 respondents or 72.2%, for age <20 years as many as 2 respondents or 5.55% and for age > 35 years as many as 8 respondents or 22.2%. This research is supported by (5) the older a person gets, the more they develop their grasping power and mindset so that the knowledge gained is getting better, most of the pregnant women in this study are in the age range > 20 years.

This is the basis for many respondents belonging to the productive age which has an impact on the memory of the information obtained so that knowledge is also good. In line with the previous research by (6) it was found that most of the research respondents were at the age of 20-35 years, these characteristics of pregnant women may affect knowledge about the nutrition of pregnant women.

From table I it is known that most of pregnant women graduated from high school as many as 18 respondents or 50%. This study is supported by research (7) that

the majority of pregnant women have high school education level where in general someone with higher education will have extensive knowledge. A person with higher education when given a stimulus about health education will behave towards the stimulus that has been given. So that the attitude is in line with the health knowledge possessed by that person.

Differences of knowledge about COVID-19 prevention and self-efficacy about pregnancy care among pregnant women

The distribution of the frequency of knowledge of pregnant women in this study refers to table II. It shows that pregnant women before providing health education using the main audio-visual media were categorized as sufficient as many as 12 respondents (66.7%), and after intervention were categorized as good as many as 16 respondents (88.9%).

Knowledge is a process of remembering and recognizing objects that are learned through the five senses in a certain way well. Knowledge is one of the research variables that is expected to increase in this study after being given health counseling interventions using audio-visual media regarding efforts to prevent Coronavirus 2019 (COVID-19) in the new normal era. In line with research (8) that respondents have different levels of knowledge. most of the respondents graduated from high school by 50%, so that most of the respondents after being given counseling used audio-visual media with good knowledge.

Pregnant women are one of the groups that are more vulnerable to exposure to the 2019 coronavirus disease (COVID-19). So that during pregnancy, the mother's immunity decreases, it is easier to get infected, therefore it needs more attention and efforts from all parties, including public awareness and compliance (9). Modification of pregnancy classes can be supported by the use of an android-based smartphone application that contains screen playback, electronic-based pregnancy monitoring during the coronavirus disease 2019 (COVID-19), and health education videos regarding health protocols and adaptation of new habits for pregnant women (10). In line with research by (11) which states that many pregnant women use applications to monitor the

development of their fetuses, to obtain information about physical activity, diet, and to track changes in their bodies.

Table IV explained the correlation in the intervention group (audiovisual media) with the p-value of the pretest and post-test knowledge measurements is 0.000 (<0.05) which means that there is a difference in knowledge increase in the intervention group in using audio-visual media to knowledge in the new normal era. Audiovisual media is a media that provides information through audio and visual aspects to provide more interesting information. This will trigger the target to use the senses of sight and hearing in receiving information conveyed through audiovisual media (16). This study concludes that there is a significant effect between counseling and audio-visual media with the respondent's knowledge about the prevention of COVID-19. With the increased knowledge of respondents, it is hoped that respondents will have a healthy lifestyle and maintain health protocols to avoid the COVID-19.

Maternal self-efficacy in this study refers to table III shows that pregnant women before intervention were the majority in the high category as many as 9 respondents (50%), and after intervention the majority were in the high category as many as 15 respondents (83.3%). A person who has high self-efficacy will have the ability to motivate himself to perform purposeful behavior based on his cognitive activity so that a person's cognitive abilities will form the ability to understand the factors that affect his health (12). In line with research (13) that the process of education is affected by several factors such as education, length of exposure time, gender, sources of information/educational media, education, psychological stress, culture, and self-efficacy, and social support with the situation faced by a person and place it as a cognitive aspect in the learning process.

This is supported by research by (14) showing the importance of health education through audiovisuals and booklets as a means to provide understanding to someone for positive information so that it will be followed by positive behavior changes because audiovisual media can provide a stimulus to individual's hearing and vision. Self-efficacy can contribute to a better understanding of the behavior change process. High self-efficacy will assume that they can use their abilities to achieve a good result with what is expected (15).

Table V shows that the results of the pretest and post-test were obtained with the results of the p-value in the intervention group being 0.001 (<0.05) which means there is a difference in the increase in self-efficacy in the intervention group in using audio-visual media on knowledge in the new normal era. In

line with research by (17) The use of video media is more effective than using MCH books on self-efficacy in understanding pregnancy danger signs. This is supported by research (18) that there is a significant difference in pregnancy care before and after intervention between social support scores and efficacy perceived self-efficacy in the intervention group, there is a positive relationship between self-efficacy and prenatal care, social support, and self-efficacy predict maternal care variance by 69.2%.

The effectiveness of audio-visual media on knowledge about COVID-19 and self-efficacy about pregnancy care among pregnant women

The effectiveness of intervention on knowledge in this study refers to table 6. It shows that there is a significant difference in effectiveness between the intervention group and the control group on the knowledge of pregnant women with p-value of 0.021 (<0.05). The counseling using audio-visual media improves the knowledge of pregnant women about efforts to prevent COVID-19. This increase in knowledge is in line with Dale's opinion that humans gain knowledge through their senses, where the more senses they use to receive information, the more knowledge they will have (19). This study also show that the importance of health education through audio-visual media as a means to provide understanding to someone about positive information so that it will be followed by positive behavior changes. Audiovisual media contains information about efforts to prevent COVID-19 for pregnant women in the New Normal Era.

When pregnant women understand that changes will occur in themselves, they will be able to change their perspective and behavior for the better. Following the ability of pregnant women, there is an increase that occurs because the material provided can be remembered well. That to increase one's knowledge, a learning media must be needed that can provide a real picture of physical concepts. Video is an audio-visual media that can reveal the object of an event like the real situation. Through video media, one can understand the learning material delivered from the video in its entirety (20).

In line with research by (21) that audio-visual media is more effective than booklet media in increasing pregnant women's knowledge with a p-value of 0.031, thus the videos can be used to provide health education about signs and symptoms of high-risk pregnancy. And research by (14) stated that there was an increase in the average knowledge score in pregnant women who were given education using audio-visual media and booklets. The audio-visual media group was much better than the group that was only given booklet education. This is because the group who was only given education with booklets

did not get direct information from health workers or people who are experts in the premenopausal field.

The supporting factors in this study are age and education factors, where the majority of respondents in this study were aged 20-35 years, namely 26 respondents or 72.2% and the majority of the last education level of respondents in this study were high school graduates (SMA) by 50%, so that age can affect individual's maturity level in receiving and processing the information given to them. The education level will also affect the acceptance and knowledge of the information provided. The higher the education background, the greater the influence on how to obtain information and the ability to manage information for their benefit.

The effectiveness of counseling using audio-visual media on self-efficacy in this study refers to table 7. It shows that there is no significant difference in effectiveness in the intervention group (audio-visual media) and the control group on self-efficacy in pregnant women. Self-efficacy will show the belief that they can carry out the actions that will be desired by certain situations successfully. This is also in line with Bandura's opinion, namely that self-confidence is an opinion or belief that a person's ability will become behavior, in this case, it is related to the situation faced by the person and places it as a cognitive element in learning. This is in line with the previous study by (22) that 11 primigravida respondents have sufficient self-efficacy. In breastfeeding mothers, the identification of the level of self-efficacy is one of the important things in influencing the mother's decision to breastfeed or not. Self-efficacy can be a predisposition to behave and act. The factor that causes behavior to occur in a person is a person's knowledge and attitude towards what that person has done (7).

Health education is a health practice that is carried out to change the behavior of individuals, groups, and larger populations towards better behavior, and also correct information will provide positive stimulation regarding healthy living behavior (23). Someone who already knows about behaviors that support the health of pregnant women in pregnancy care during the new normal era will understand and be confident about these behaviors when changes occur.

CONCLUSION

The p-value for the effect of audiovisual media on pregnant women's understanding of how to protect themselves against contracting COVID-19 is 0.021 ($p < 0.05$). However, the p-value for the influence of audiovisual media on pregnant women's self-efficacy in regards to pregnancy care was 0.296 ($p > 0.05$). Pregnant women as a high-risk group must obtain

health information, especially pregnancy care during the pandemic through effective and innovative health education media. Health workers must be able to develop health education media according to the needs and characteristics of pregnant women so that pregnant women are interested in learning. Further research is needed on the effect of audiovisual media on other variables such as attitudes, behavior, perceptions, self-confidence, etc. Other research can also develop other innovative interventions that can increase knowledge about COVID-19 prevention and self-efficacy regarding pregnancy care during the pandemic.

ACKNOWLEDGEMENT

The authors would like to thank the Health Polytechnic of Ministry of Health Semarang, Mantok Health Center, and Banggai Health office who have supported the implementation of the research.

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