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The impact of health education videos on the level of knowledge and attitudes of pregnant women about danger signs in pregnancy

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ABSTRACT

Introduction: Complications of pregnancy can cause morbidity and mortality. Pregnant women should know about these complications so that they can immediately get intervention. Some of these complications are referred to as danger signs of pregnancy. The paper aims to see the effect of health education videos on the level of knowledge and attitudes about danger signs in pregnancy.

Methods: This quasi-experimental study used a nonequivalent pretest-posttest with a control group design. This research was conducted at Jetis Public Health Center (PHC) (intervention group) and Pajangan PHC (control group). The number of respondents was 64 pregnant women. The control group received education with the Maternal and Child Health (MCH) handbook, while the intervention group also received education using the MCH handbook and education using videos about the danger signs of pregnancy. An educational video with a duration of 10 minutes and 19 seconds contains about dangerous signs of pregnancy and actions that must be taken to overcome these problems. Educational videos were given to respondents via Android phones that can be watched repeatedly. data analysis has been carried out with the t test.

Results: Based on the homogeneity test the characteristic data between the intervention and control group were homogeneous. Comparison between the difference in the knowledge of the pre-posttest in the intervention group compared to the difference in the pre-posttest knowledge of the control group (8.59 vs. 0.31) with p-value = 0.311, meaning that there is no effect of providing education with video on knowledge. Comparison between the difference in pre-posttest attitudes of the intervention group compared with the difference in pre-posttest attitudes of the control group (1.71 vs. -1.21) p-value = 0.001, meaning that there is an effect of providing education with video on attitudes.

Conclusion: Health education videos can improve the attitude about the danger signs of pregnancy.

Keywords: health education; danger signs of pregnancy; video education.
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INTRODUCTION

A review of data from the 2019 World Health Organization (WHO) Statistics Report reveals that maternal mortality remains a significant global health concern. In 2015, it was estimated that there were 303,000 maternal deaths during pregnancy and childbirth. In 2016, maternal mortality constituted the second leading cause of mortality among women of reproductive age, after HIV/AIDS, and the leading cause of mortality among women aged 15-29 years. The highest maternal mortality rates continue to be concentrated in countries on the African continent, while the majority of regions in Indonesia also contribute significantly to maternal deaths, with rates ranging from 100 to 299 per 100,000 live births in 2015[1].

The maternal mortality rate (MMR) in Indonesia is based on the country's 2019 health profile data, which indicated that the MMR during the period 1991-2015 ranged from 390 to 305 per 100,000 live births. Despite a decline, the target set by the United Nations Millennium Development Goals (UN-MDGs) was not achieved. By 2024, the government of Indonesia has set a target of reducing the maternal mortality rate (MMR) to 183 per 100,000 live births. The number of maternal deaths by province in the period 2018-2019 exhibited a decrease from 4,226 to 4,221. Yogyakarta is one of the provinces in Indonesia, with a maternal mortality rate (MMR) of 34 cases in 2017. This represents a decrease from the 2016 figure of 39 cases. Yogyakarta Province is comprised of four districts, with Bantul district ranking first in terms of MMR. In 2017, the rate was 9 cases, rising to 14 cases in 2018 and 13 cases in 2019.[2]

A review of the causes of maternal mortality in Indonesia in 2019 revealed that the primary causes were bleeding (1,280 cases), hypertension in pregnancy (1,066 cases), and infection (207 cases).[3] The 2017 Indonesian Demographic Health Survey (IDHS) report showed that among women aged 15-49 years who had a live birth in the 5 years prior to the survey, 81% of women had no complications, 5% had excessive bleeding, 3% had edema of the face, hands and feet or headaches accompanied by seizures, 3% experienced vomiting and did not want to eat, 2% experienced premature

rupture of membranes, 2% experienced signs of early labor before 9 months, and 8% experienced other complications including high fever, seizures, fainting, anemia and hypertension.[4]

Previous research on knowledge and attitudes toward pregnancy danger signs has been conducted in several countries, including Papua New Guinea, India, Egypt, Jordan, and South Ethiopia. Based on the results of this study, only a small proportion of women know the danger signs of pregnancy which can be explained as follows: According to research conducted by Vallely et al., in Papua New Guinea, among 459 women who routinely perform ANC checks, only 53.6% reported having received health education about the danger signs of pregnancy, and only 60% of the women who had received health education were able to re-explain the danger signs.[5,6,7,8]

Previous research provided an intervention in the form of Maternal Health Education about the danger signs of pregnancy with the conventional method (lecture). The research conducted by Mwilike et al. indicated there was an increase in the knowledge score about the danger signs of pregnancy after being given the Maternal Health Education with a value of $p = 0.048$.[9] Currently, there is still very limited research that uses the video method to increase women's knowledge about the danger signs of pregnancy.

More proactive efforts to socialize and promote Maternal Health education about the dangerous signs of pregnancy are needed to lower the MMR in Indonesia. One approach is the print media in the form of the Maternal and Child Health (MCH) handbook, while another alternative is the video media.[10] Videos have the advantage of providing visual and auditory stimulation that helps increase a person's knowledge of certain learning materials. This health education video can be accessed easily through gadgets or cell phones owned by pregnant women. With the increasing interest in this approach, the researchers aimed to examine whether there is a positive effect of health education through informative videos on the level of knowledge and attitudes of pregnant women about the danger signs of complications in pregnancy.

METHODS

This quasi-experimental study used a non-equivalent pretest-posttest with a control group design. The researchers conducted a simple random selection process to determine the place of the research. As a result, Jetis 1 Health Center was designated as the intervention group, and Pajangan Health Center was selected as the control group in the Bantul District. Inclusion criteria were: pregnant women who attend antenatal care (ANC) at Jetis 1 Health Center and Pajangan Health Center in February-April 2021, are able to read and write, have an Android cellphone and are able to operate it, are willing to be respondents and filled out the informed consent form. Exclusion criteria were pregnant women who have congenital diseases such as heart disease, kidney disease, diabetes mellitus, asthma, and others. Based on the sample calculation for the estimated sample size in the unpaired group with α 95% and β 90% the result indicated that the minimum number of samples was about 29.04 or at least 30 samples in each group. The researchers used a purposive sampling technique to select the research subjects.

The intervention group received education using the Maternal and Child Health Handbook and education using videos about the danger signs of pregnancy. This educational video about the danger signs of pregnancy with a duration of 10 minutes and 19 seconds contains danger signs of pregnancy that pregnant women need to know and what actions should be taken to overcome these problems. Educational videos are provided through the WhatsApp media group and pregnant women are given the opportunity for 2 weeks to study the maternal and child health handbook and watch the videos repeatedly. In addition, pregnant women are also reminded to watch a video once a week. The control group received education with the Maternal and Child Health handbook only as the routine intervention usually given by public health center staff. The questionnaire used to measure attitude knowledge and self-efficacy was previously tested for validity and reliability and declared valid and reliable. Measurements with knowledge and attitude questionnaires were carried out before the intervention was given and after 2 weeks of intervention. Data analysis to compare knowledge data between the intervention group and the control group was carried out with an unpaired t test.

RESULT

Based on Table 1 about the characteristics of respondents in the intervention group and control group, the majority of pregnant women are aged between 20-35 years, the majority are in the 3rd trimester of pregnancy (27-40 weeks), the majority are multigravida, and the work status of the mothers is mostly not working or housewives. The majority of mothers' last education is high school and more than half of the family's opinion state that their income is less than or equal to the UMR (the average minimum wage for the Yogyakarta area). The homogeneity test in both groups (intervention and control groups) for all characteristics showed no significant differences. The pre-test values of knowledge and pre-test scores of attitudes in both groups showed that both were in a homogeneous condition.

Table 2 shows in the intervention group who received education about the danger signs of pregnancy with an informative video, the average value of pre-posttest knowledge increased by 75.46 vs. 84.06 with a significant increase ($p = 0.000$)[11], while in the control group who received information from MCH books tended to remain the same 72.03 vs. 72.34. The value of the attitude of the pre-posttest of mothers in the intervention group also tended to increase even though it was only slightly (72.31 vs. 74.03) and not significant ($p = 0.438$)[12], while the value of the attitude of the pre-posttest of mothers in the control group tended to decrease with a significant decrease with 73.68 vs 72.46 (p=0.010).

Table 3 shows the results of the analysis of the difference in the value of knowledge and attitudes in the two groups. The value of knowledge shows no significant difference in the two groups with a value of $p = 0.311$, while for the difference value of attitudes in the two groups, there was a significant difference with $p = 0.001$. The educational video intervention for danger signs of pregnancy can improve the mother's attitude and increase their attitude score

Table 1. Characteristics of respondents in the intervention group and control group

Characteristics Respondents (n = 64)	Intervention group (n = 32)		Control group (n = 32)		*p*-value
	Number	(%)	Number	(%)	
Current age of pregnant women					
20-35 years old	29	90.6	30	93.7	0.500
More than 35 years	3	9.4	2	6.3	
Mother's current gestational age					
Trimester 1 (1-13 weeks)	6	18.7	6	18.7	0.962
Trimester 2 (14-26 weeks)	12	37.5	11	34.3	
Trimester 3 (27-40 weeks)	14	43.8	15	47	
Gravida					
Primigravida	6	18.7	11	34.3	0.102
Multigravida	23	81.3	21	65.7	
Mother's work status					
Doesn't work	22	68.7	22	68.7	1.000
Working	10	31.3	10	31.3	
Mother's last education					
Low (elementary and junior high)	4	12.5	5	15.7	0.766
Intermediate (high school)	22	68.7	23	71.8	
High (university)	6	18.8	4	12.5	
Family income					
Less or equal to UMR (Minimum regional wages)	17	53.1	20	62.5	0.307
More than UMR (Minimum regional wages)	15	46.9	12	37.5	
	mean	**SD**	**mean**	**SD**	***p*-value**
Knowledge pretest	75.46	9.01	72.49	7.49	0.102
Attitude pretest	72.31	8.19	73.68	5.78	0.441

SD, standard deviation.

Table 2. The difference in scores of pre- and post-test in knowledge and attitudes of each group

Value of group	Pre-test		Post-test		*p*-value
	Mean	SD	Mean	SD	
Knowledge intervention group	75.46	9.01	84.06	8.37	0.000
Knowledge control group	72.03	7.49	72.34	8.42	0.945
Attitude intervention group	72.31	8.19	74.03	7.53	0.438
Attitude control group	73.68	5.78	72.46	5.48	0.010

Paired t-test; SD, standard deviation.

Table 3. Change in scores in knowledge and attitudes in the two groups

Variables	Intervention group (n = 32)		Control Group (n = 32)		*p*-value
	Delta Mean	SD	Delta Mean	SD	
Delta post-pre knowledge	8.59	9.77	0.31	8.70	0.311
Delta post-pre attitude	1.71	11.72	-1.21	5.71	0.001

Unpaired t-test; SD, standard deviation.

with a statistically significant difference, while the knowledge value increased, but the increase was not significant.

DISCUSSION

According to the Ministry of Health of the Republic of Indonesia, the period of pregnancy makes normal changes in the body of pregnant women and causes several common complaints for pregnant women. These complaints generally go away on their own. However, there are several serious danger signs to watch out for, including: refusal to eat and persistent vomiting, high fever, reduced fetal movement, edema, bleeding and premature rupture of the membranes.[13] Conditions associated with these danger signs if not given immediate intervention will lead to more serious complications for the mother and fetus that will threaten the health and well-being of the mother and fetus during pregnancy. In order for pregnant women to understand and immediately respond when there are danger signs of pregnancy, pregnant women need to receive an appropriate education. The education chosen in this study was by using video. Video is one of the educational media that was developed along with the development of digital information. Based on a systematic review study conducted by Schnitman, there is a high effectiveness

of providing maternal education with the use of digital instruments or it can be said that digital instruments are effective and can be accepted by mothers as a medium for providing education.[14] Despite these positive results, there is still no education with a specific format that can improve maternal health outcomes.

According to the results of this study, the level of knowledge and attitudes of pregnant women about the danger signs of pregnancy both in the intervention and control groups showed good results. The average knowledge values of the intervention and control groups were 75.46 vs. 72.49 (max value of 100), while the attitude value of the intervention and control groups was 72.31 vs. 73.68 (max value of 100). This comparison shows that prior to being given education, the mother's levels of knowledge and attitude were good. The results of this study are different from previous research conducted by Hoque & Hoque, in KwaZulu-Natal South Africa, where it was found that from 92% of the population who came to health services only some (52%) knew about signs of dangers of pregnancy, and 39% know about HIV status.[15] Likewise, research by Bolanko et al., in Wolaita Sodo town, South Ethiopia, indicated that the knowledge of pregnant women about the danger signs of pregnancy is still very low, namely out of a total of 740 women who participated in this study only 124 people or (16.8%) knew about the obstetric danger signs.[8] The results of Aziz et al. research conducted in Assiut city, in Upper Egypt, among 300 women, found only 26.7% had good readiness for childbirth and facing any possible complications.[7] These preliminary data indicate that pregnant women need a more effective education to increase knowledge about the danger signs of pregnancy.

Women who have complete knowledge about the possible complications that occur in their pregnancy will have better preparedness for birth. Likewise, the women who have complete knowledge of complications during birth and have complete knowledge of complications during postnatal have better preparation. This knowledge about obstetric complications during pregnancy, childbirth, and postpartum is an important predictor of women's readiness to face childbirth. Education of pregnant women about possible complications can help women to prepare well for their birthing experience.[6]

The results of this study showed that in the group that received education from the MCH handbook and video education about the danger signs of pregnancy, the comparison of pre and post-test knowledge scores showed a significant increase, while the attitude value also increased even though the increase was not significant. Compared to the group who received regular education from the MCH handbook only, the pre-test and post-test knowledge scores tended to show the same value. The attitude of pregnant women about the danger signs of pregnancy tends to decrease. After analyzing the differences between the pre- and post-test scores and then comparing the intervention and control groups for knowledge scores, the intervention group showed a higher increase than the control group, but the increase was not significant. For the attitude value, the difference in the pre- and post-test showed a significant difference. It can be said that providing education with videos about the danger signs of pregnancy is effective in increasing the attitudes of pregnant women about the danger signs of pregnancy.

Mwilike et al., in Tanzania, found that there was a significant increase in the value of knowledge between pre-test and post-test with $p = 0.048$. The main difference with this study is that the research of Mwilike et al. used an intervention in the form of a program called "Nipo Nawe" (I am with you), while in this study, the intervention was education that uses video media.[9] Education with video media can be trusted to increase one's knowledge and skills and has been proven effective in several studies in the medical area.[16,17,18] The proof of the effectiveness of using video media for education about labor induction was demonstrated by Rahman.[19] The result showed education with video media could increase knowledge and satisfaction with the delivery experience. Video education is an innovative and important way to increase knowledge and satisfaction in dealing with the labor induction process. The advantages of video were also conveyed by the study conducted by Sinha et al., in which 95% of the participants involved in their research reported knowledge retention and 90% stated that this intervention with video was very helpful. In addition to the use of educational videos to provide education about preparing patients to go home in addition to Increasing patient satisfaction can also increase the satisfaction of nurses who provide services.[20]

The effectiveness of videos to provide education about antenatal education and postnatal support strategies for improving rates of exclusive breastfeeding is explained by Lin-Su et al., that antenatal breastfeeding education and postnatal lactation support, as single interventions based in hospitals both significantly improve rates of exclusive breastfeeding up to six months after delivery.[21] Kellams et al. have a different opinion on the effectiveness of using video for prenatal education. This study suggests that an educational breastfeeding video alone is ineffective in improving the hospital breastfeeding practices of low-income women.[22] This ineffectiveness is explained because the target population is at risk, and this specific population requires more extended education from preconception and during pregnancy.

Some of the impressions of the messages conveyed by respondents after receiving health education through videos about the danger signs of pregnancy, namely, the respondents admitted that the explanations in the video included were easy to understand and not boring. Respondents were also happy to receive health education through videos. They asked the researchers to provide similar activities with broader material because it is very helpful for pregnant women who may be too lazy to read. The video approach can support the health of pregnant women and their babies. The results of the literature review by Catherrjee et al., indicated that a good educational video needs guidelines for developing and assessment tools to help optimize the use of time and resources in making videos. These guidelines can assist doctors in developing videos that are more informative and educational for their patients.[23]

Digital platforms, one of which is in

the format of educational videos, are an important source of health information for pregnant women around the world.[24,25,26] Based on a systematic review conducted by Schnitman et al., entitled The Role of Digital Patient Education in Maternal Health: A Systematic Review, it was found that the use of all main patient education formats (text with images, video, and SMS) by studies generally increased yearly. Among the different formats, studies using videos produced the highest rate of significant patient benefits, compared to the other two formats.[14] This observation is consistent with other studies supporting video as an advanced and effective patient education method.[27,28,29] In fact, there are no significant differences regarding the different formats used (text with image, video, and SMS); the more important considerations that influence the effectiveness of digital interventions are the quality and accuracy of the materials, adherence to education, audience needs, and implementation strategies.[14]

CONCLUSIONS

Intervention video education about the danger signs of pregnancy is effective in increasing the attitudes of pregnant women about the danger signs of pregnancy. Mothers can become better able to identify the danger signs of pregnancy, able to identify worsening symptoms, able to choose the action that must be taken, and able to decide to immediately come to health services if experiencing these danger signs of pregnancy. The researchers found it is important that education with interesting media, one of which is video, continue to be improved to increase the knowledge and attitude of pregnant women about health.

AUTHOR CONTRIBUTIONS

The principal investigator designed and managed the research, conducted the analysis, and wrote the manuscript. The other researchers coordinated and conducted the trial recruitment and follow-up and contributed to planning discussions regarding the trial. All authors revised the work, approved the version to be published and agreed to be accountable for all aspects of the work.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

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ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical approval was granted from the Medical and Health Research Ethics Committee (MHREC) Faculty of Medicine, Public Health and Nursing Universitas Gadjah Mada – Dr. Sardjito General Hospital, Ethical committee approval Ref. Number: KE/FK/0073/EC/202.1

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