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Effectiveness of Digital Pocketbooks and Animation Videos in Education of Pregnancy Danger signs among Women in the Third Trimester of Pregnancy







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ABSTRACT

Aims This study aimed to determine the effectiveness of digital pocketbooks and animated videos about the danger signs of pregnancy in women in the third trimester of pregnancy at the Kebon IX Health Center, Jambi City, Indonesia.

Partiipants & Methods This pre-experimental study used a two-group pre-test post-test design involving 120 women in their third trimester of pregnancy referring to the Kebon IX Health Center, Jambi City, Indonesia. The dependent variable was knowledge, while the independent variable was health education using animated videos and E-books about the danger signs of pregnancy. Statistical analysis was done using SPSS 16 by the Wilcoxon test. Findings The pre-test knowledge level of most of the subjects in the animated video media group was at a good level (50%), and after the intervention (post-test), it increased to 100%. The pre-test knowledge level of most of the subjects in the E-book group was at a good level (66.7%), and after the intervention (post-test), it increased to 100%. There were differences in the level of knowledge of pregnant women before and after the intervention using animated videos and E-books (p-value <0.001).

Conclusion Animated videos and E-books can increase the knowledge of women in the third trimester of pregnancy about the danger signs of pregnancy.

Keywords Video-Audio Media; Women; Knowledge; Pregnancy

CITATION LINKS

[1] Fear of pregnancy and ... [2] The impact of pregnancy and childbirth on sexual behaviors: A systematic ... [3] Maternal mortality in the United States: Updates on trends, causes, and ... [4] Current status of pregnancy-related maternal mortality in Japan: A report from the Maternal Death ... [5] Maternal mortality audit based on district maternal ... [6] Twin pregnancy and severe maternal outcomes ... [7] Concerns of women regarding pregnancy and ... [8] Mothers' and fathers' sense of security in the context ... [9] Levels and causes of maternal mortality and ... [10] Traditional beliefs and practices in pregnancy, childbirth and postpartum: A review of the evidence from Asian ... [11] Profil Kesehatan Kota ... [12] Pendidikan kesehatan terhadap tingkat pengetahuan deteksi tanda bahaya kehamilan dan ... [13] Gambaran pemanfaatan buku KIA dan pengetahuan ibu hamil ... [14] The effect of buzz group discussion on increasing knowledge of pregnant women husbands about danger sign of pregnancy in ... [15] Pengembangan media video pembelajaran pada mata pelajaran IPA tentang sifat dan perubahan wujud benda kelas IV ... [16] Perbandingan efektifitas media penyuluhan poster dan kartun animasi terhadap pengetahuankesehatan gigi dan mulut (Studi pada Siswa ... [17] The effect of e-book-based family planning services guide on knowledge women of childbearing ... [18] Metode penelitian bisnis: pendekatan kuantitatif, kualitatif, kombinasi ... [19] Pendampingan dan pelatihan media buku saku oleh kader sebagai motivator keberhasilan pemberian ... [20] Pengaruh promosi kesehatan tentang bounding attachment berbasis video animasi terhadap pengetahuan ... [21] Pengaruh buku saku pijat bayi terhadap keterampilan ibu dan kualitas tidur bayi ... [22] Perbandingan pendidikan kesehatan menggunakan buku saku dengan metode ceramah terhadap tingkat pengetahuan ibu ... [23] Pengaruh media pembelajaran berbasis WEB terhadap peningkatan ... [24] Edukasi kesehatan dengan media video animasi: Scoping ... [25] Pengaruh video learning multimedia terhadap pengetahaun ... [26] Peran media video animasi dalam meningkatkan ... [27] Efektifitas lembar balik dan video animasi ... [28] Pengembangan media video pembelajaran untuk ... [29] Penerapan video pembelajaran dapat ...

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Introduction

The maternal mortality rate (MMR) is an indicator used to measure the health status of a country [1, 2]. Mortality and morbidity in pregnant and giving birth women is a significant problem in developing countries. Although 90% of the process of pregnancy and childbirth is standard, there is still a 10% chance that someone will experience complications during pregnancy and childbirth [3, 4].

Giving birth to a normal and healthy baby is a hope for couples. Maintaining pregnancy means maintaining healthy nutrition, eating lots of fruits, and having your womb checked at least six times during pregnancy. Trying to maintain pregnancy health is not only about the physical aspects but also must focus on the psychological aspects so that pregnancy and childbirth can be done well ^[5, 6].

Pregnancy and childbirth are maturity crises with the potential for anxiety or even stress, but they are valuable because women prepare themselves to provide care and assume greater responsibility [7]. A mother plays a vital role in infant growth and child development [8]. Health problems experienced by a pregnant mother can affect the fetus's health in her womb until the birth and growth of the child [9]. Efforts have been made in antenatal care, delivery assistance by health personnel with midwifery competence, postpartum maternal health services, and handling obstetric and neonatal complications. Being pregnant and caring for a baby is challenging when pregnant woman neglect their condition, which can result in abnormal babies [10].

In Jambi Province, the coverage for the first visit (V1) was 103.24%, and for four prenatal checks (V4) was 92.68%. For the V1 examination in Muaro Jambi Regency, 8,725 cases (108.1%) were covered, and the V4 coverage was 8,288 cases (100.21%). Meanwhile, the number of obstetric complications handled in Jambi Province in 2020 was 79.11%, in Muaro Jambi was 99.92%, and in the Kebon IX Health Center was only 78.65% [11].

Maternal deaths recorded at the Jambi Provincial Health Office in September 2021 were 57 cases consisting of 12 pregnant women deaths with eclampsia, 25 maternal deaths during childbirth, and 20 maternal deaths during the postpartum period. In the same year, there were seven cases of maternal death in Muaro Jambi Regency, and at the Kebon IX Health Center, one maternal death was recorded, where high-risk pregnancy was one of the highest causes of maternal mortality [11].

These data show that there are still families, both mothers and husbands, who are not aware of pregnancy problems that can endanger the safety of the mother and her baby. Danger signs in pregnancy may be accompanied by bleeding symptoms in early or late pregnancy, swelling in the legs, hands, or face accompanied by headaches or seizures, fever or high fever, amniotic fluid coming out prematurely,

reduced or no movement of the baby in the wombas, vomiting, and loss of appetite.

The family's lack of knowledge about the detection of danger signs during pregnancy causes early diagnosis to be delayed, decision-making to be postponed, and health workers to start treatment later [12, 13].

Previous research [14] in the Sindang Barang Health Center indicated the need for a better health education method, in which the knowledge and attitudes of husbands of pregnant women about danger signs of pregnancy through the buzz group method showed very small increases.

Educational methods using aids that involve more senses affect the success of understanding educational goals. Animated video is an image media with a moving effect so that each effect looks alive [15]. Andriany *et al.* [16] showed the effectiveness of educational media of animated cartoons rather than poster media in increasing dental and oral health knowledge in fifth-grade students of SDN 24 Banda Aceh City.

The development of mobile technology is currently rapid. One of the common mobile devices that are currently used is a cell phone. Android-based digital pocketbook application is one of the developments of mobile learning (M-learning). This Android-based digital pocketbook application is user-friendly, easy to use, and practical, and does not take up too much space in the system for installation [17].

This study aimed to determine the effectiveness of digital pocketbooks and animated videos in the danger signs of pregnancy in women in the third trimester of pregnancy referring to the Kebon IX Health Center, Jambi City, Indonesia.

Participants and Methods

Research design

The current pre-experimental study used a two-group pre-test post-test design.

Participants

We conducted the research from January to April 2022 at the Kebon IX Health Center, Muaro Jambi Regency, Indonesia, on 120 women who were randomly selected and met the inclusion criteria, such as being in the third trimester of pregnancy, not giving birth before, ability to use of an Android-based mobile phone, while mothers in the first to two trimesters of pregnancy were excluded from this study. The animation video group consisted of 60 pregnant women, and the other 60 pregnant women were allocated to the digital E-book education group.

Intervention

The research variable was the knowledge of pregnant women. Before the intervention, the researcher measured pregnant women's knowledge level (pretest). Then, after the intervention, the researcher remeasured pregnant women's knowledge level (posttest). The intervention was an animated video and E-

book about the signs and dangers of pregnancy. Each group received educational materials using predetermined intervention tools. The researchers explained the meaning of danger signs in pregnancy, the dangers of pathological pregnancy, and the prevention of pathological pregnancy. Researchers presented the materials using posters or pictures of danger signs in pregnancy. Implementation of the education was done for 1 hour, materials were distributed within 45 minutes, and 15 minutes was considered for discussion.

To ensure the delivery of the E-book, the research team sent the E-book file to each participant via WhatsApp. Follow-up after sending the E-book was done via chat and WhatsApp calls, and in the group on WhatsApp.

Rigid restrictions regarding mass gatherings in one location during the peak period of the pandemic forced the research team to provide instructions to respondents via chat and voice notes on the WhatsApp group. We also paid close attention to the respondent's ability to understand our directions. We also strictly monitored each respondent.

The knowledge questionnaire consists of 20 questions with correct and incorrect answer choices. If the woman of childbearing age answered correctly, she was given a score of one; if the answer was wrong, she was given a score of zero. The range of scores obtained was between 0 and 20. A good category is given if the score is 16-20 (76-100%), moderate if the score is 12-15 (56-75%), and poor if the answer score is 1-11 (0-55%).

The questionnaire used the Guttman scale. The Guttman scale has an important feature as it is a cumulative scale and only measures one dimension of a multidimensional variable; therefore, this scale is dimensionless. The data obtained are interval data or dichotomous ratios (two alternatives) [18].

The researcher was a lecturer and researcher with a work experience of 10-15 years and had master's and Doctoral degrees. Due to the research background in the health and preparation of many questionnaires, the researcher prepared a questionnaire for this study. Before the research, the questionnaire was tested on 15 pregnant women and the results indicated that two questions had to be replaced because they were invalid.

Educational Content

The animated video contained educational materials plus videos on how to detect danger signs of pregnancy, particularly in the third trimester, as well as an E-book explaining normal pregnancy, danger signs of pregnancy in the third trimester, how to prevent high-risk pregnancies and prevention of high-risk pregnancies.

Outcomes

This study produced a description of the knowledge of pregnant women before and after given animation video about danger signs of pregnancy and the effect of the designed E-book on danger signs of pregnancy among pregnant women.

Sample Size

A total of 120 women of childbearing age were calculated using the Slovin's formula at α = 0.05, and the total population was considered to be 178 people.

Ethical Considerations

No economic incentives were offered or provided for participation in this study. Because the subject was still a minor, the researcher asked for and obtained parental consent so that their child could participate in the study. The study was performed in accordance with the ethical considerations of the Helsinki Declaration. This study obtained ethical feasibility under the Health Research Ethics Commission of the Ministry of Health, Jambi, and registration number LB.02.06/2/19/2021.

Statistical analysis

Data are presented as numbers and percentages for categorical variables. Continuous data were expressed as mean±standard deviation (SD) or median with interquartile range (IQR), then, proceed with bivariate analysis using the Wilcoxon test. All analyses at a p-value<0.05 were considered significant. Statistical analysis was performed using SPSS version 16.

Findings

The characteristics of respondents including age, education, employment status, and parity are presented in Table 1.

Table 1) Demographic characteristics of the subjects

Characteristics	No.	%
Age (year)		
<20 and >35	70	58.3
20-35	50	41.7
Education		
Basic	6	5
Junior school	30	25
High school	60	50
Associate degree	13	10.8
Bachelor's degree	11	9.2
Employment		
Working	40	33.3
Not working	80	66.7
Parity		
Primipara	69	57.5
Multipara	51	42.5

Table 1 shows that most mothers (70, 58.3%) aged <20 and >35 years. The respondents' education was mostly high school as many as 60 respondents (50%). Most respondents did not work (80, 66.7%), and 69 respondents (57.5%) were found to be primipara. Table 2 shows that the pre-test knowledge level of most of the subjects in the animated video media group was at a good level (50%), and after the intervention (post-test), it increased to 100%. The pre-test knowledge level of most of the subjects in the E-book group was at a good level (66.7%), and after the intervention (post-test), it increased to 100%.

Table 2) Knowledge level before and after the interventions							
Knowledge	Animated video		E-book				
	Pre-test	Post-test	Pre-test	Post-test			
Poor	4(6.7%)	0(0.0%)	1(1.7%)	0(0.0%)			
Sufficient	26(43.3%)	0(0.0%)	19(31.7%)	0(0.0%)			
Good	30(50%)	60(100%)	40(66.7%)	60(100%)			

Table 3 shows a significant increase in students' knowledge after education using animated videos and E-books (p=0.001).

Table 3) Knowledge score before and after receiving the animated video and E-book

VIUCO allu E-DOOK			
Knowledge	No.	Mean±SD	Median
Animated video			
Pre-test	60	15.03±3.08	15
Post-test	60	17.80±1.41	18
E-book			
Pre-test	60	15.16±2.05	16
Post-test	60	17.90±1.43	18

Discussion

In addition to preparing physically and mentally for childbirth, there are several signs that pregnant women must know. These signs usually indicate that the pregnancy is in crisis or requires medical treatment as soon as possible [19, 20]. To understand this, the researchers conducted education using intervention tools providing animated videos and E-books.

Before the intervention, some respondents did not understand the danger signs of pregnancy, such as fever as a symptom of infection, swelling, a danger sign of trimester III, and the meaning of danger signs in pregnancy, which can be due to the lack of knowledge of the mother's pregnancy because of the lack of information obtained through health workers, social media, or other sources of information.

The intervention tool used in this study was an Ebook. A pocketbook is a type of print media that is small, light, can be stored in a clothes pocket, and is simple to carry and read anywhere and anytime. Health workers can use pocketbooks to convey socialization or display a subject or unique materials dedicated to audiences [21, 22].

This study proved that using E-books was very effective in increasing the knowledge of pregnant women, especially women in the third trimester of pregnancy about the danger signs of pregnancy. This study further strengthens the results of Susilawati *et al.* [17], who reported that E-book-based learning media significantly affects the knowledge of women of childbearing age in contraceptive services in Penyengat Low Village, Jambi City.

Pregnant women perceive that pocketbooks are very interesting to open anytime because they are easy to carry anywhere. Likewise, the contents are easy to understand because they are written in straightforward language.

The second used tool was video animation. Initial data indicated that most respondents who received education through animated videos had a good level

of knowledge (50%). After receiving the educational materials delivered through animated videos, the respondents' knowledge increased to 100%. It shows that education using animated videos is as effective as an E-book.

Animated videos are one of the teaching aids arranged based on the principle that human knowledge is received or captured through the five senses [23,24]. An excellent animated video uses simple language, is easy for readers to understand, and has an exciting title. It combines text and pictures, and the materials follow the intended target. Animated videos can be widely distributed and can convey information to women and their families or support the information they receive [25-27].

Following the theory that video media has many advantages, including repeating it if necessary, adding clarity, and making the message fast and easy to remember, video can encourage and increase motivation to keep watching [15, 28]. By providing classes for pregnant women using video, the respondents will have a more interested attitude toward the material presented, which can be repeated at any time by the respondents at home [29]. We made the videos in animated form to look more attractive with concise and clear language. Most video health education providers had better attitudes compared to traditional media [29]. Thus, video media is more effective in increasing the knowledge and attitudes of pregnant women in assisting childbirth. One of the limitations of this research was no classes for pregnant women at the Puskesmas during the pandemic so that the implementation of research activities coincided with other health services. Education should be done at a particular time and place; for example, during classes for pregnant women so that respondents are more focused and comfortable.

In the future, intervention tools, such as animated videos and digital E-books must be designed according to the interests and needs of potential participants so that they are always interested in reading and watching. Second, there is a need for more intense dissemination of the research results to health workers because this intervention tool is remarkably effective and efficient. It only requires short contact between educators, patients, and the community.

Conclusion

Animated videos and E-books have great potential to increase the knowledge of women in the third trimester of pregnancy about the danger signs of pregnancy.

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Conflict of Interests: None declared.

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