



Development of a Motion Graphic Video about Balanced Nutrition during Pregnancy as an Educational Media for Pregnant Women

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ABSTRACT

This motion graphic video educational media was developed by applying multimedia principles. In this way, this motion graphic video can be used by pregnant women as an effort to increase the knowledge and attitudes of pregnant women regarding consumption patterns during pregnancy and can reduce the incidence of complications in pregnancy and childbirth. The research design used was the Research and Development (R&D) method. This research was conducted from February 2023 to November 2023. The sample in this study was 1 material expert, 1 media expert, and 26 pregnant women. Research sampling was carried out using purposive sampling. The research method used in this research is the ADDIE method (Analysis, Design, Development, Implementation, Evaluation). Based on the research results, it can be concluded as follows: The results of the motion graphic video feasibility test about balanced nutrition during pregnancy were declared very feasible by media experts with a score of 92%, by material experts with a score of 96%, by pregnant women with a score of 87.3%. Motion graphics can be useful as an educational media, because motion graphics are combination of visual-based pieces of design or animation that combine film language.

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1. Introduction

The pregnancy period is a critical period in life that greatly determines the quality of the generation that will be born. Pregnant women can not only meet the nutritional needs of themselves, but also the fetus they are carrying. The risk of complications during pregnancy or birth is lowest if the mother's weight gain during pregnancy is adequate (Arisman, 2014)

Maternal nutritional adequacy during pregnancy has been widely highlighted because it has a huge influence on the child's growth and development. Pregnant women who suffer from chronic energy deficiency (KEK) have a greater risk of illness, especially in the third trimester of pregnancy, than normal pregnant women. As a result, it will have an impact on increasing the risk of giving birth to a baby with low birth weight (LBW). Babies with LBW tend to experience growth and development obstacles such as slow cognitive development, brain development, intelligence, and are at risk of infant death (Khoiriah et al., 2015)

WHO data reports that 60-80% of the infant mortality rate (IMR) that occurs is caused by LBW. LBW babies have a greater risk of experiencing morbidity and mortality than babies born with normal

weight. WHO data also states that the prevalence of LBW babies in the world is 15.5% or around 20 million babies born every year, around 96.5% of which occur in developing countries (Who, 2014)

Based on Indonesian health profile data in 2019, the birth rate of babies with Low Birth Weight (LBW) in Indonesia reached 111,827 births and increased in 2020 to 129,815 (3.1%) of the incidence of babies born with LBW (Kemenkes RI, 2021)

South Sumatra, the number of births of LBW babies is quite high, namely in 2019, around 272 (0.17%) babies were born and increased in 2020, reaching 1,681 (1.09%) babies born with LBW. In this way, LBW births in South Sumatra in 2020 increased sixfold from the previous year. And the city of Palembang is one of the largest cities that contributes to LBW incidents. Based on health service data in 2019, the number of births of LBW babies reached 108 LBW births and increased in 2020 to 163 LBW births (Dinkes Sumsel, 2021)

One of the efforts to prevent and control LBW that can be done is by providing good health education (education) to pregnant women about balanced nutrition during pregnancy so that it can cause changes in the attitudes and behavior of pregnant women regarding good eating and drinking patterns during pregnancy (Istiany et al., 2014)

Providing education or health education can be done by utilizing currently developing technology and information in developing learning media for pregnant women in particular. Motion graphic video is an appropriate medium for providing education about balanced nutrition for mothers during pregnancy. The form of motion graphics has the advantage of being able to provide information that is more easily absorbed and informative. The use of motion graphics in video animation can help simplify the message of the content carried by the main data. Breaking all the data into parts actually helps to present the information in small chunks but it is an interesting and simple way to show the information. This really supports the human character who tends to prefer to obtain information through audiovisual systems (Lankow et al., 2014)

This motion graphic video educational media was developed by applying multimedia principles. In video development, researchers will create motion graphic educational videos with animation and narration that will explain related material in a more interesting way. In this way, this motion graphic video can be used by pregnant women as an effort to increase the knowledge and attitudes of pregnant women regarding consumption patterns during pregnancy and can reduce the incidence of complications in pregnancy and childbirth (Lankow et al., 2014)

This research is expected to increase the knowledge and skills of pregnant women, especially in fulfilling nutrition during pregnancy. so that in this way, pregnant women are able to improve their health status, reduce the morbidity and mortality of pregnant women, and reduce the incidence of low birth weight and stunting in the babies they will give birth to.

Based on the background above, the author is interested in conducting research on the development of motion graphic videos about balanced nutrition during pregnancy as an educational medium for pregnant women.

2. Methods

The research design used was the Research and Development (R&D) method. The Research and Development (R&D) method is a research and development method used to produce certain products and test the effectiveness of these products (Sugiyono, 2015). The product produced in this research is a motion graphic video about balanced nutrition for pregnant women

This research was conducted from February 2023 to November 2023. This research was conducted at the independent practice of midwives in Palembang City, namely the independent practice of midwife Lismarini and the independent practice of midwife Meli Rosita. The sample in this study was 1 material expert, 1 media expert, and 26 pregnant women. Research sampling was carried out using purposive sampling. The research method used in this research is the ADDIE method (Analysis, Design, Development, Implementation, Evaluation) developed to design a learning system with a wide scope. (Sugiyono, 2015)

The data obtained in developing this Motion graphic video is in the form of primary data, namely quantitative and qualitative data to determine product suitability. The data collection instrument used is through filling out questionnaires. Quantitative data was obtained from the results of assessments by media experts, material experts and pregnant women. Meanwhile, qualitative data comes from input and suggestions from experts by media experts, material experts and pregnant women. Data analysis in the assessment used in this research uses a Likert scale, namely using 5 categories consisting of very feasible, feasible, quite feasible, not feasible, and very unfeasible. The feasibility of a motion graphic video is determined by calculating the average value of each aspect (Sudaryono et al., 2013).

3. Results and Discussion

This research resulted in the development of digital-based educational media which has been validated by media experts, material experts and has been tested by pregnant women. The steps used in developing this video are as follows:

Analysis stage

The results of the analysis that have been carried out are used as guidelines and considerations in preparing and making motion graphic videos about balanced nutrition during pregnancy. Analyzes carried out include: a) Performance analysis, at this stage, researchers collected data related to the problems and needs faced by pregnant women. The results of the analysis are that around 90% of pregnant women need information about balanced nutrition during pregnancy. Researchers hope that this video will make it easier for pregnant women to understand nutritional needs and nutritional patterns during pregnancy. b) Target analysis, from the results of questionnaires on pregnant women, it was concluded that the knowledge and skills of pregnant women regarding balanced nutritional patterns during pregnancy are still low. c) Material analysis, at this stage, the researcher conducted a literature study, discussed with experts/material experts who have competence in preparing motion graphic videos about balanced nutrition during pregnancy.

Design Stage (Design)

At this stage, GBIM (media content outline), JM (material description) and storyboard will be developed by referring to book and journal sources. At this stage, motion graphics for balanced pregnancy nutrition are developed with several activities: a) Preparation of video material related to pregnancy nutrition in accordance with standard references for antenatal care. At this stage, researchers began to compile materials from relevant sources related to nutrition during pregnancy. This material was obtained from various sources, both books and journals. b) Design video scenarios, at this stage the researcher designs the storyline/scenario of the video to be designed which refers to the material that has been collected previously. c) Design educational materials and educational evaluation tools, the design of educational materials in the form of motion graphic videos about balanced nutrition during pregnancy was carried out by CV. Kencana Al Fathurrahman as a team of experts in preparing research instruments. Meanwhile, the evaluation tool is in the form of a questionnaire which is used to evaluate the media that has been designed. Preparation of instruments based on aspects that have been adapted to the objectives of the questionnaire. These instruments include evaluation questionnaires by material experts, media experts and questionnaires for pregnant women.

Development stage (Development)

At this stage, educational video media with motion graphics will be developed. The development of educational animated videos begins with character, colouring, animating, voice over, composting and the editing process to produce the desired video according to the scenario/plot that has been prepared by the researcher.

Implementation

At this stage, the media that has been designed will be analyzed through several stages with respondents, namely: a) Expert trial (expert review) from media experts, namely Annisa Baizan, Amd.T. The comments/suggestions for improvement from media experts include increasing the clarity of the

tone intonation used in the video to make it more varied and using major tones in the voice over. b) Expert trials (expert review) from nutritional material experts, namely Sucita Lestari, SKM, M.Kes. The comments/suggestions for improvement from nutrition experts include adding examples of the contents of my plate for pregnant women. So it estimates the type and portion of food pregnant women eat. Complete the material by adding information about foods that are recommended and foods that are not recommended for pregnant women.

Validation questionnaire assessment results: a) Media expert validation questionnaire assessment. The results of media expert trial data can be seen in table 1 below.

Table 1
Results of validation questionnaire assessment by media experts

No	Aspects	Analysis	Validator
1	Media aspect	Score	46
		Max score	50
		Xi	92%
		X	92%
		Criteria	Very feasible

Based on table 1, it shows that the media aspect is very suitable for use, namely 92%.
Material expert validation questionnaire assessment

Table 2
Results of validation questionnaire assessment by material experts

No	Aspects	Analysis	Validator
1	Material aspect	Score	42
		Max score	50
		Xi	84%
		X	84%
		Criteria	Very feasible

Based on table 2, it shows that the material aspect is very suitable for use, namely 84%.

Revise media creation

After the media has been reviewed by a media expert, then revisions are made which are recommended by the media expert and have been revised according to input from the expert, namely increasing the clarity of the tone used in the video to make it more varied and the use of major tones in the voice over. Then the material was reviewed by a material expert, then revisions were made as suggested by the expert, namely adding examples of the contents of my plate for pregnant women. So it estimates the type and portion of food pregnant women eat. Complete the material by adding information about foods that are recommended and foods that are not recommended for pregnant women.

Results of the revised assessment of the media expert questionnaire, after revisions are made, the video is assessed again by media experts. The assessment results can be seen in table 3 below:

Table 3
The results of the stage 2 questionnaire assessment were validated by media experts

No	Aspects	Analysis	Validator
1	Media aspect	Score	46
		Max score	50
		Xi	92%
		X	92%
		Criteria	Very feasible

Based on table 3, it shows that the media aspect is very suitable for use, namely 100%. The comments from media experts, namely the media, are very applicable and efforts are made to be accessible to respondents.

Results of the revision of the material expert questionnaire, after revisions are made, the video is assessed again by material experts. The assessment results can be seen in table 4 below:

Table 4
The results of the stage 2 questionnaire assessment are validated by material experts

No	Aspects	Analysis	Validator
1	Material aspect	Score	46
		Max score	50
		Xi	92%
		X	92%
		Criteria	Very feasible

Based on table 4, it shows that the material aspect is very suitable for use, namely 96%. As for comments from material experts, the material is clear enough and easy for respondents to understand and has complete content.

Individual trial (one to one evaluation), after the product has gone through the validation stage by media experts and material experts as well as media revisions, the product is then tested on one (1) pregnant woman.

Table 5
Results of the individual trial validation questionnaire assessment (one to one evaluation)

No	Aspects	Analysis	Validator 1
1	Media Video aspect	Score	48
		Max score	50
		Xi	96%
		X	96%
		Criteria	Very feasible

Based on table 5, it shows that this motion graphic video media is very suitable for use, namely 96%. And respondents gave suggestions so that this video could be disseminated to the public to make it easier for pregnant women to learn about pregnancy nutrition.

Limited trial (small group evaluation) trial carried out on 5 pregnant women

Table 6
Limited trial validation questionnaire assessment results (small group evaluation)

No	Aspects	Analysis	Validator				
			1	2	3	4	5
1	Media Video aspect	Score	48	45	44	46	43
		Max score	50	50	50	50	50
		Xi	96%	90%	88%	92%	86%
		X			90,4%		
		Criteria			Very feasible		

In table 6 above, you can see the results of a limited trial (small group evaluation) showing that in the video media aspect of motion graphic videos about balanced nutrition during pregnancy, the data was found to have a value of 90.4% (very feasible) for pregnant women.

Evaluation (Evaluation), based on the implementation stages, this motion graphic video about balanced nutrition during pregnancy needs to be evaluated. At the evaluation stage, final revisions were made to the product developed based on respondents' input provided at the implementation stage. This was done to correct or perfect deficiencies in the motion graphic video about balanced nutrition

during pregnancy. It is hoped that the motion graphic video about balanced nutrition during pregnancy can help pregnant women educate themselves about pregnancy nutrition. After the revision was carried out, another assessment was carried out by 20 pregnant women. The results are: Field trials were conducted simultaneously on 20 pregnant women.

Table 7
Field test validation questionnaire assessment results (field test)

No	Aspects	Analysis	Validator									
			1	2	3	4	5	6	7	8	9	10
1	Media	Score	40	43	46	44	45	44	46	43	40	42
		Max score	50	50	50	50	50	50	50	50	50	50
	Video aspect	Xi	80%	86%	92%	88%	90%	88%	92%	86%	80%	84%
		X	87,3%									
		Criteria	Very feasible									

No	Aspects	Analysis	Validator									
			11	12	13	14	15	16	17	18	19	20
1	Media	Score	43	40	45	44	46	41	47	43	46	45
		Max score	50	50	50	50	50	50	50	50	50	50
	Video aspect	Xi	86%	80%	90%	88%	92%	82%	94%	86%	92%	90%
		X	87,3%									
		Criteria	Very feasible									

In table 7 above, you can see the results of the field test showing that in the motion graphic video media aspect about balanced nutrition during pregnancy, the data was found to have a value of 87.3% (very feasible) for pregnant women.

In developing a motion graphic video about balanced nutrition during pregnancy using the ADDIE model which consists of 5 stages, namely analysis, design, development, implementation, evaluation. Based on the analysis stage, it was found that the research results showed that pregnant women needed information regarding nutritional patterns during pregnancy. Then at the design stage, material search is carried out, designing video scenarios and designing educational materials and educational evaluation tools.

The development stage starts with character, coloring, animating, voice over, composting and the editing process to produce the desired video according to the scenario/plot that has been prepared by the researcher.

At the implementation stage, the media that has been designed will be analyzed through several stages with respondents, namely expert trials (expert review) by media experts, expert trials (expert review) by nutritionists, individual trials (one to one evaluation), limited trials (small group evaluation).

In the expert trial (expert review), media experts concluded that there was a need to increase the clarity of the intonation of the notes used in the video so that they were more varied and the use of major tones in the voice over. Meanwhile, in the expert trial (expert review) the nutritionist suggested that it was necessary to add examples of the contents of my plate for pregnant women. So it estimates the type and portion of food pregnant women eat. Complete the material by adding information about foods that are recommended and foods that are not recommended for pregnant women

From the data from individual trials (one to one evaluation), it was found that this motion graphic video media was very suitable for use, namely 96%. And respondents gave suggestions so that this video could be disseminated to the public to make it easier for pregnant women to learn about pregnancy nutrition.

Data from the results of a limited trial (small group evaluation) shows that in the aspect of motion graphic video media about balanced nutrition during pregnancy, the data obtained has a value of 90.4% (very suitable) for pregnant women.

At the evaluation stage, the results of the field test showed that in the motion graphic video media aspect about balanced nutrition during pregnancy, the data obtained had a value of 87.3% (very feasible) for pregnant women.

Choosing the right media is very important in conveying information. Health education requires tools in the form of media to convey the material that will be provided, one of the media that we can use is video (Notoadmojo, 2014)

Animated videos can be a reference for educational media because they have several advantages, one of which is that they are simple and fun media, because the learning material presented can be in the form of moving images, seen and heard. According to research, learning outcomes using animation media are more effective than those that do not use animation media (Johari et al., 2014)

Motion graphics are generally a combination of visual-based pieces of design or animation that combine film language with graphic design which can be achieved by including a number of different elements such as animation, video, film, typography, illustration and music (Machda, 2010)

The results showed that there was a significant difference in knowledge of drug storage between groups exposed to motion graphics and leaflet media (p-value=0.029). The median knowledge score for the motion graphic group (85.71) was higher than the leaflet group (71.43). Motion graphics can be useful as an educational medium regarding effective drug management for the community, especially housewives (Puspita & Syahida, 2020)

3. Conclusion

Motion graphic video educational media was developed by applying multimedia principles. In this way, this motion graphic video can be used by pregnant women as an effort to increase the knowledge and attitudes of pregnant women regarding consumption patterns during pregnancy and can reduce the incidence of complications in pregnancy and childbirth. Based on research with the Research and Development (R&D) method knows results is the motion graphic video feasibility test about balanced nutrition during pregnancy were declared very feasible by media experts with a score of 92%, by material experts with a score of 96%, by pregnant women with a score of 87.3%. Motion graphics can be useful as an educational media, because motion graphics are combination of visual-based pieces of design or animation that combine film language with graphic design which can be achieved by including a number of different elements such as animation, video, film, typography, illustration and music.

The limitation of this research is that this research is still at the stage of developing video media as an educational medium for pregnant women only. It is hoped that in future research, an assessment of the level of knowledge, skills and behavior of pregnant women can be carried out before and after being given intervention in the form of video motion graphics of pregnant women about balanced nutrition during pregnancy.

Submission

Please submit the manuscript to the Open Journal System at <https://iocscience.org/ejournal/index.php/JMN/> and should there be any question, please mail your question by email to jmn.editor@iocscience.org. The communication between the authors and the editors will be done through Open Journal System.

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