

DEVELOPING A SHORT FILM AS AN EDUCATIONAL MEDIUM ABOUT DIETARY PATTERNS FOR TYPE 2 DIABETES MELLITUS PATIENTS IN THE WORKING AREA OF THE PUSKESMAS JEMBATAN KECIL BENGKULU CITY

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Abstract

Diabetes mellitus is a disease marked by hyperglycemia resulting in disturbances in insulin secretion or function. Risk factors, the main triggers of diabetes mellitus type 2, include genetic factors, lifestyle, and unhealthy eating patterns. Diet management based on the 3J principle (schedule, quantity, and type) plays an important role in controlling blood glucose levels in type 2 diabetes mellitus patients. Education and health through audiovisual media can effectively transform knowledge for somebody through the five senses of information. Therefore, effective educational media are needed, it can be through audiovisual media, namely short films. This research aimed to develop and assess short film eligibility as a medium for dietary education for type 2 diabetes mellitus sufferers in Puskesmas Jembatan Kecil, Bengkulu. Then, the Research and Development (R&D) method with the ADDIE development model, which includes the stages of analysis, design, development, implementation, and evaluation. The research sample consisted of 43 type 2 diabetes mellitus patients from a total population of 294 patients. Data collection was carried out through interviews, observations, questionnaires, validation media expert, and validation expert materials, as well as testing the eligibility to respondents. Results analysis needs to show that a big part of the informants like film media as a means of delivering health information. Results validation media experts obtain a value of 81.81% with a very good category rating, whereas validation expert material gets a value of 100% with a very good category rating. Test eligibility on users shows a percentage of 93.02%, which shows that short film media is very worthy of use as an educational medium for health for type 2 diabetes mellitus sufferers. Short film media developed as expected can be effective for education in increasing patient understanding about the importance of diet planning for type 2 diabetes mellitus control.

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INTRODUCTION

Disease patterns have transitioned over the last few decades from infectious diseases to non-communicable diseases (1). Non-communicable Diseases (NCD) are conditions that are not communicable or transmitted to a person through contact, to be causes 60% of all deaths in the world,

and claims the lives of around 35 million people every year, with 80% of those cases occurring in developing countries (2).

Currently, the disease is the leading cause of death in all age groups, followed by stroke, hypertension, diabetes mellitus, cancer, heart disease, and chronic respiratory disease (3).

Diabetes mellitus is a metabolic disease with metabolism, characterized by an increasing level of glucose in the blood (hyperglycemia) caused by a problem in insulin secretion, insulin effectiveness, or both. The factors that influence blood glucose levels include diet, activity patterns, and physique (4).

About 90% of diabetes cases are type 2, which is characterized by abnormal insulin sensitivity and insulin secretion (5). This disease causes hyperglycemia, which means high sugar levels in the blood. Diabetes mellitus type 2 is a chronic multifactorial disease transmitted in a hereditary way. In this type of diabetes, B cells are still active, but insulin resistance appears because genetic factors prevent the absorption of glucose into the network, so that trigger hyperglycemia influenced by external factors (6).

IDF 2021 recorded 537 million cases from throughout the world; the number of diabetes sufferers is expected to increase to 643 million by 2030. SKI (Indonesian Diabetes Federation) reported that the prevalence of diabetes mellitus 11.7% (7).

According to the Health Office of Bengkulu Province, in 2023, there were 23,460 people with Diabetes, with 5,367 (23%) receiving standard care. The Bengkulu City Health Office noted 3,087 diabetes mellitus sufferers in 2022. In 2023, the number of diabetes sufferers in Bengkulu City reached 3,476, spread across several districts/city. According to the numbers, 42% accepted standard care. In 2023, the Bengkulu City Health Department noted the number of cases of diabetes mellitus was highest in the Puskesmas Telaga Dewa with 308 cases (8.8%), followed by Puskesmas Jembatan Kecil with 294 cases (8.4%), and Puskesmas Penurunan with 239 cases (6.8%).

The main risk factors for type 2 diabetes include factors that affect diabetes mellitus, covering genetics, lifestyle, and unhealthy eating patterns. Handling a diabetes mellitus patient depends on five pillars:

education, physical activity, diet, monitoring independent blood sugar levels, and using antihyperglycemic drugs (AEDs) (8).

In the management of diabetes mellitus, diet occupies the second pillar of the five existing pillars. Diabetes mellitus sufferers need to pay attention to their diet, including schedule, quantity, and the type of food consumed.

Bad eating habits, as recommended by the 3J principle (Schedule, Quantity, and Type), can cause blood sugar levels to be unstable (9). Educational health through audiovisual media can effectively change knowledge, someone's past five senses, and someone who studies information. Tata method implementation, education audiovisual media based capable of inspiring desire somebody Study more and make it easier somebody in accept information. So, the information provided will be more accepted because using 2 panca senses at the same time. Because with audiovisual media, somebody can study alone, can repeat parts not yet understood, displaying something in particular detail, video can be accelerated or slowed down according to their preference (10).

A study by Suprobo found that audiovisual therapy using film can stimulate the body to release endorphins, which play a role in create feeling. from happiness. In addition to portion as a besides as source entertainment, movies can used as a tool for education. That is easily understood by many kinds of groups, from children until person mature (11).

Several study previously shown that audiovisual media are effectively used as a means of health education. The results of the study showed a significant influence of diabetes mellitus diet education using videos on controlling blood sugar levels in diabetes mellitus patients with a p-value of 0.0001 at RSI Sultan Agung Semarang (12).

This is in line with other studies which show that after being given education using an audiovisual approach,

all participants had a good level of knowledge regarding DSME (13).

In addition states that short movie media is one of the appropriate media, suitable for the technological era, informative and interesting for the public, so that it can increase public understanding. Therefore, the development of educational media short film based expected to increase the understanding of diabetes mellitus patients of proper diet planning (11).

A short film is defined as a film that has a duration of less than 60 minutes. This media is considered Good For explain something That is from A process natural and can influence attitude viewers in a way effective with percentage messages that can remember by the audience reaches 70% of what is conveyed.

This research is expected to give consideration to promotional media development, an attractive and health-based community, particularly in education and nutrition for diabetes mellitus sufferers.

Based on the background, this study aims to develop educational media in the form of a short film regarding the diet of type 2 diabetes mellitus sufferers and evaluate the suitability of the media through validation experts, and test the effectiveness of the media on type 2 diabetes mellitus patients in the region, Puskesmas Jembatan Kecil, Bengkulu.

METHOD

Study: This is mixed-methods research, namely, research that combines quantitative and qualitative research. Type of research: This is research development is a method used to produce a certain product, and test the validity, practicality, and effectiveness of the product.

This research used a mixed methods approach, namely combining qualitative and quantitative approaches, with qualitative used on stage analysis, needs through interview deep with type 2 diabetes mellitus sufferers to determine the need for appropriate educational media. Meanwhile, a quantitative method is used to evaluate the eligibility of film media short through

validation by a media expert, expert materials, as well as test respondents using a questionnaire media assessment.

Method study development of own A procedure, usually research called process development using the created "ADDIE" by Dick and Carry in 1996. The ADDIE model is used to develop five stages. Five stages, among others, are Analysis, Design, Development, Implementation, and Evaluation.

The population in this research is all over diabetes mellitus type 2 sufferers in the region, work area of Puskesmas Jembatan Kecil, Bengkulu, totaling 294. The sample is part of the number of characteristics possessed by the population. The determination of sample selection in this research is using the Purposive Sampling Technique. The sample in this study totaled 43. For qualitative data, amount informant, namely 5 people who were chosen in a random way, in accordance with the criteria. Amount informant taken from samples of type 2 diabetes mellitus sufferers in the work Puskesmas Jembatan Kecil, Bengkulu. To avoid bias in research results, then it is determined criteria for inclusion and exclusion of the sample are determined. In this case, include:

a. Criteria Inclusions:

- 1) Diabetes mellitus type 2 patients willing to become respondents.
- 2) Registered and domiciled in the area Work Puskesmas Jembatan Kecil, Bengkulu.
- 3) Patient can read, write, and listen with Good
- 4) Patient aged >40 years
- 5) Can Work The same with Good

b. Criteria Exclusions :

- 1) Patients who are located stay outside the region, Work Puskesmas Jembatan Kecil, Bengkulu.
- 2) Diabetes mellitus patients with awareness decrease

- 3) Diabetes mellitus patients with physical limitations (tuna blind, tuna speech, tuna deaf).

This research was conducted from January to June 2025 in the region Work Puskesmas Jembatan Kecil, Bengkulu.

The instruments in this research consist of qualitative and quantitative instruments.

1. Instrument Qualitative
 - a. Human Instrument

In a qualitative study, the researcher himself becomes the instrument.
 - b. Tool Recorder

In this research, the researcher assisted with a tool recorder interview in the form of a cell phone used for record on moment process interview implemented.
 - c. Guidelines Interview

Guidelines are used during interviews so that researchers own directed goals moment do interview.
2. Instrument Quantitative

Use sheet test media suitability for the quantitative instruments used is sheet validation. Sheet media validation is used to determine the appropriateness of the media used in learning.

Sheet validation expert material is used to know how much of the material presented and its relevance to expected competencies, and a worksheet questionnaire on type 2 diabetes mellitus sufferers (respondents) is used to know comments or suggestions for the media created.

Data collection techniques in this research use qualitative and quantitative data collection techniques.

 1. Qualitative data collection techniques using interview techniques. An interview is metho data collection with the interview's direct informants being researched.
 2. Quantitative data collection techniques use sheet validation and a questionnaire directed to expert

media, expert materials, and for respondents, to evaluate the qualification of the media that was made.

Data Processing Techniques

1. Study Qualitative

For data processing in this study, the data were processed with descriptive analysis. Process analysis descriptive is as follows ¹⁵:

a. Data Reduction

Reducing data means summarizing, selecting the main points, focusing on important matters, and looking for themes and patterns. So, the data that has been reduced will give a clear and easy picture for further data collection.

b. Data Display

Data presentation is done with a method describe results of interviews that are presented in a form description with text narrative, and supported by documents, as well as taking pictures and pictures similar to hold something in conclusion.

c. Consultation Drawing

In this research, the withdrawal conclusion was drawn by taking a summary of the series of result categories from the study based on observation and interviews.

2. Study Quantitative

Data processing in this research was conducted using a computer, that is done through a process with the following stages:

a. Data Editing

Data editing is the stages of selection and inspection to ensure the completeness of the data obtained. For grouping and arranging data.

b. Data Coding

Coding data, namely giving code to results obtained from existing data, that is according to the type, then entered in a sheet table, criteria

use make things easier do analysis on the data obtained.

c. Tabulating

Tabulating is entering the results data study to in table in accordance with the criteria for the data that has been determined.

1) Processing

Data that has been tabulated, processed manually, or on a computer so that you can analyze it.

2) Cleaning

Cleaning is done, checking to return the data that has been entered to the computer, whether the error or not. In this process, an error was found.

Analysis of the data used by researchers is descriptive qualitative, and analytical quantitative.

1. Analysis Descriptive Qualitative

Descriptive qualitative analysis with content analysis started by compiling a set of categories (codes) for grouping say or phrase. The code is then applied to the code or criteria, and then processed with the tool statistics. Content analysis is a method quantitative for analyzing qualitative data.

The stages analysis in this research is as follows:

- a. collection: Data obtained from interviews and observations on test try short films.
- b. Categorization (Coding): Data is classified into several categories or themes, such as film content, understanding informants, and content message.
- c. Interpretation results: Results of the analysis content interpreted for known response users on short films. All data and information analyzed will be used as references and guidelines in the short film design about the eating patterns of type 2 diabetes mellitus sufferers.

2. Analysis Quantitative

a. Test Validation

Validation by an expert was done by 1 person, an expert material, and 1 person, a media expert. Validation by expert material covering the quality materials, and aspects of the benefits material. While validation by media experts include aspect media quality, aspects of the use of language, and aspects of media layout, as well as comments and suggestions.

Next, results validation and advice from experts were analyzed, then used for revising short films. Test try field on diabetes mellitus sufferers type 2 gives insertion into the short films that were developed. Suggestions from the results test, try this next analysis for repair, so that it can produce a worthy ending product. Quantitative data in the form of numbers, results calculation, or measurement processed with a method, are added up, then compared to the expected amount, so that the percentage eligibility.

The formula used is as follows:

$$\text{Eligibility percentage (\%)} = \frac{\text{Skor yang diharapkan} \times 100\%}{\text{Skor yang diobservasi}}$$

Table 1: Interpretation Test Validity

Achievement Presentation	Interpretation
76 – 100%	Very Worthy
56 – 75%	Worthy
40 – 55%	Enough
0 – 39%	Less than worthy

Data analysis with descriptive quantitative methods was used for processing data collected from questionnaires, sheet validation from media experts, and expert materials used to get a description of the media developed. This quantitative data was obtained by researchers in a step study, media validation, and testing the media. This research uses descriptive quantitative methods with statistics as follows:

Table 2: Criteria Media Eligibility

Criteria Media Eligibility	
Assessment Categories	Value Interval
Worthy and reliable	$(S_{min} + p) \leq S \leq S_{max}$
Not worthy and not reliable	$S_{min} \leq S \leq (S_{min} + p-1)$

Information

S: Respondent Score

S min: Respondent Score Lowest

S max: Respondent Score Highest

P: Length Class Interval

Media that has been made will be tested for eligibility, media that is assisted by an expert media and expert materials related to the filling sheet questionnaire. Test the suitability of the media use formula criteria eligibility media (14).

Test eligibility aims to see if the media is suitable or not worthy to be tested, try it on diabetes mellitus sufferers type 2 as a target in a short film about the eating patterns of diabetes mellitus sufferers type 2 in the region, Work Puskesmas Jembatan Kecil, Bengkulu.

RESULTS AND DISCUSSION

Step beginning study short film development as a medium for educating people on the diet of type 2 diabetes mellitus sufferers in the region, Work Puskesmas Jembatan Kecil, Bengkulu has analysis needs.

- A. Analysis need done with do interview to 5 people informant that is diabetes mellitus sufferers type 2 in the region, work Puskesmas Jembatan Kecil, Bengkulu. Based on the results of the interview with informants, the media is needed that can help respondents get information about a diet for diabetes mellitus sufferers. The desired media by the informant is video media (short films) because fun, easy to understand, and often accessible. As is the quote following :
 "... If mother Suko, who is playing Dad film plague because easy ..."

(If mother, I like things like videos and films because easy) (informant 3)

"... Ms. loves movies but the long idak because Fierce watch also on Facebook toucan many sometimes ..."

(Mother likes movies, but not that long, Because Like watch videos on Facebook too, sometimes) (informant 5)

- B. Design Stage media design is done with compiled concepts as follows:

- a) Media concept based on stage requirements analysis, the needs of informants, the concept of this media is a short film as media education about eating patterns, diabetes mellitus type 2 sufferers in the region, work Puskesmas Jembatan Kecil, Bengkulu. In the design stage, researchers compile a customized short film design to meet the target need. Media design includes compilation of the channel story, determination of the message of education, storyboard making, and determination of the character in the film. The main message you want delivered in this film is the implementation of the 3J principle (schedule, quantity, and type) of food) In dietary management for type 2 diabetes mellitus sufferers.

- b) Storyboard is compiled to describe the channel story systematically, starting from the introduction problem, giving information through power health, up to solutions that can be implemented by diabetes mellitus sufferers in daily life.

- c) Talent based stage requirements request that the video be explained directly by a person, original (human), with a quote as follows:
 "... Story real lah more Good story real ..." story real lah more Good story real) (informant 4)

"... I more Like story real ..." (informant 2)

"... More interesting Yo story real ..."

(more interesting yes story real) (informant 1)

"... The real thing like ..."

(the real one like) (informant 3)

"... The real thing ..." (informant 5)

There are 3 talents in this video, which are the student who is Mother Siti (Nova), the cast Mother diabetes, Dinda (Septi Amelia) as the mother's child Siti, and the Doctor Ratna (Tasya) as the doctor.

d) Film duration this short film is 4 minutes 57 seconds long and conveys information about dietary rules for type 2 diabetes mellitus sufferers.

e) Theme The theme of this short film is an educational video that explains about 3j (type, schedule, and amount) of the recommended diet for diabetes mellitus sufferers.

f) Title and name of the film content. This short story is entitled " Wise" In Every Feeding.

g) Short film technique. This film is a type of educational video that uses a method of lecture to deliver information about eating patterns for diabetes sufferers. Informant request that the video be explained directly by the original (human).

C. Implementation After stage. The next stage of media design is media production (development) based on the design that has been made by researchers. Previously, this short film was made using a Sony a7ii camera with a 50mm f/1.8 lens. Use a suit color neutral to look clear with using the full shot technique, medium shot, big close up, close up, extreme close up. This short film was edited using a computer with software applications using Adobe Premiere Pro 2025 and After Effects. After the media is finished, made Then media will be tested try it to expert media and expert material.

D. After finishing the stage short film production (development) about the eating patterns of type 2 diabetes mellitus sufferers, the next stage is stage validation by media experts and experts. Results of media validation by media experts obtained that 81.81% of the media stated very worthy used with several comments and suggestions for media repair," Font or writing more clearly ”.

Results validation eligibility material by expert material obtained that is, 100% of the media is stated very worthy used and not There is suggestion repair.

After that, the test media suitability is done. Before conducting test media suitability, the media is based on suggestions and input from validators.

Test media suitability is carried out for type 2 diabetes mellitus sufferers in the region, Work Puskesmas Jembatan Kecil, Bengkulu, which consists of 43 people. Before doing the test, the respondent's media suitability was requested to fill in a sheet to inform consent. After that, the respondent requested to watch the short films that had been provided. Results test try media from several aspects carried out in the region Work Puskesmas Jembatan Kecil, Bengkulu as follows:

Table 1: Frequency Distribution from Media Evaluation Aspects by Respondents

Rated aspect	Worthy		Not feasible	
	Amount	Percentage	Amount	Percentage
	(Σ)	(%)	(Σ)	(%)
The suitability of the dialogue or narrative used	39	90,70	4	9,3
The suitability of the film's storyline to the main problem.	34	79,1	9	20,9
Clarity of language used	30	69,77	13	30,2
Sound volume setting	16	37,21	27	67,79
Suitability of voice intonation	30	69,77	13	30,2
The suitability of the background music used in the film	16	37,21	27	62,79
Accuracy of images and explanations	38	88,37	5	11,63
Character suitability in the film	17	39,53	26	60,47
Suitability of the material to the film content	40	93,0%	3	7,0
Suitability of film duration	17	39,53	26	60,47
The film's appeal	29	67,44	14	18,6
Ease of understanding the contents of the material	40	93,0	3	7,0
Ease of conveying information	35	81,4	8	18,6
The accuracy of the film's storyline increases motivation for healthy eating patterns.	39	90,7	4	9,3

Distribution frequency assessment on aspects of suitability of dialogue or narrative used, suitability of film plot with main problems, clarity of language used, suitability of intonation sound, accuracy of picture with explanation, suitability of material with film content, film interest, convenience of understanding content material, convenience of conveying information, accuracy of channel inner film story increases motivation pattern. Eat Healthy respondents stated very worthwhile.

Meanwhile, on the aspect of suitability, volume 37.21% of respondents voted state was not worth enough. One aspect of the suitability of the background music used in the film was 37.21% of respondents state not worth enough. On aspect suitability character in the film 39.53 respondents state not worth enough. In the aspect of film duration, 39.53% of respondents state not worth enough. Based on the results of the test, try the media that is carried out in the region work Puskesmas Jembatan Kecil, Bengkulu, obtained results that 90.70% of short film media are very worthy for use in giving information regarding eating patterns of diabetes mellitus sufferers. The desired media by the informant is a video media (Short Film).

Results research that has been done obtained results have shown that 90.70% of short films are very worthy for use in giving information regarding eating patterns in diabetes mellitus sufferers.

Based on previous research, several studies have demonstrated the effective use of short films as a health education medium. Other research also found the short film CERDIK to be effective in increasing knowledge of hypertension management among elderly participants in Integrated Health Posts (15).

Another relevant study, "The Impact of Short Films on Nursing Students' Attitudes About Mental Health and Recorded Illnesses, Towards Psychiatric Patients," concluded that short films about mental health disorders made by students had a positive

influence on their attitudes toward psychiatric patients (16).

Furthermore, another study, entitled "Production and validation of the short film *Pés que te quero* @: educational technology for people with diabetes," demonstrated that the short film is a valid and reliable educational technology for promoting foot care for people with diabetes (17).

In this research, the researcher designs appropriate media for the target based on results analysis of media needs, namely, a true story type and content easy to understand. A short film can serve a very long duration short as long as the idea you want delivered is already delivered well. Many people have opinions that, through short films, we can see the honesty of the problems presented (18). The size of the writing contained in the media is 16pt because the size of the letter influences the understanding of respondents.

This media provides stimulus to the hearing and sight, so results are obtained more effectively. Results can be achieved because five of the most sensitive senses distribute knowledge to the brain is the eye being the most sensitive (more than 75% to 87%), while 13% to 25% of knowledge is obtained or distributed through other senses.

CONCLUSION

Based on the objectives and results of the study on the development of a short film as a dietary education medium for people with type 2 diabetes mellitus in the Puskesmas Jembatan Kecil area of Bengkulu City, it can be concluded that short films are the medium recommended by informants for conveying health education messages because they are considered more engaging, easier to understand, and effective in conveying information. The media development process involved several stages, including design, implementation, integration, and testing, including validation by media experts and

content experts, followed by questionnaire trials and media trials with respondents.

The feasibility test results showed that the developed media received a score of 81.81% from the media experts, categorizing it as very feasible, while the validation by content experts earned a score of 100%, categorizing it as very feasible. Furthermore, the media trials with the community showed a 90.70% approval rate, indicating that the short film is highly suitable for use as a health education medium. Thus, the short film was successfully developed as a dietary education medium for people with type 2 diabetes mellitus and was deemed suitable for use based on the expert validation results and respondent assessments.

This study also recommends further research to test the effectiveness of media use on patient behavior change. Furthermore, future media development is expected to encompass broader content and be tailored to different target audiences for optimal use.

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