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Breaking the Cycle of Stunting: Development and Validation of Bunda Usir Stunting (Busita) Module and Media to Early Detection of Infant Stunting

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ABSTRACT

The prevalence of stunting in Indonesia is 24.4%, which is higher than the WHO average of 20%. One of the efforts that can be made to reduce stunting rates is the early detection of stunting in infants. An interactive e-booklet media called Busita was developed to provide practical early detection tools. The aim was to develop an interactive electronic booklet that provides content from the Busita module. The research method used in this study was Research and Development (R&D). Validity testing was conducted using a group of Subject Matter Experts (SMEs), determined by the Content Validity Ratio (CVR) and Content Validity Index (CVI), and the USE Questionnaire for the media validated by five experts. The Busita module contains all essential materials inside, as proven by CVR and CVI values between 0 and 1, with an average of 0.8, which can be interpreted as very good and important. The interactive e-booklet Busita media obtained a feasibility assessment through expert validation with an average score of 84.09, covering four aspects of assessment: usefulness, ease of use, ease of learning, and satisfaction. This research also involved five cadres in a pilot study, and the results of the dependent t-test showed a p-value of <0.05. The module and the media have been shown to measure knowledge, attitude, and practice in the early detection of infant stunting.
Keywords: stunting; validity; media; module

Introduction

Stunting is the percentage of children aged 0 - 59 months with a height below minus two (moderate and severe stunting) and minus three (chronic stunting) as measured using WHO child growth standards. Stunting can be prevented with adequate nutritional intake, especially in the First 1000 Days of Life [1]. According to data from the Indonesian Nutrition Status Survey (SSGI), Indonesia has a stunting prevalence of 24.4%, this figure is still higher than Vietnam, Malaysia and Thailand [2]. According to WHO standards, an area is considered chronic if the prevalence is above 20% [3]. Central Java is 1 of 12 provinces in Indonesia with the highest prevalence of stunting in Indonesia. There are 19 districts or cities in Central Java that have a prevalence of stunting cases between 20% and 30% percent with the total cases according to the Indonesian Nutrition Status Study (SSGI) in 2021 being 20.9%[4]. According to data from the 2021 Indonesian Nutrition Status released by the Ministry of Health, it is stated that the prevalence of stunted toddlers in Semarang City is 21.3% [5].

Many efforts have been made to reduce the prevalence of stunting cases in Indonesia, such as the TPPS program carried out by the national government, RAN Pasti by Central Java, and Si Bening by the City of Semarang. The programs that currently exist focus more on toddlers who are already experiencing stunting, whereas, one very important effort to help make the program successful is through early detection which is monitored from the beginning of the baby's growth period through monitoring growth and development and providing correct nutrition at the time of birth. First 1000 Days of Life (HPK) [6] [7] [8]. Early detection efforts are generally carried out by health workers and health cadres who have undergone

training during examinations at posyandu. Proper and immediate early detection can help parents provide appropriate treatment and care.

Previous research in North Semarang District showed that only 30% of cadres had correct knowledge about early detection of stunting and recording baby development. [9]. Health cadres as the spearhead of health in the community must of course be given adequate supplies so they can provide services according to needs [10]. One of the factors that influences stunting is knowledge [11]. It is important to increase knowledge about stunting among all levels of society, but health cadres as an extension of health workers must be prioritized. The most important knowledge gained is early detection of stunting in babies who have the potential to experience stunting for health cadres [12].

Providing information to increase knowledge must also be able to adapt to current developments and user flexibility so that it can effectively increase the knowledge of readers [13]. In this digital era, there is a lot of information spread on the internet, but its source and validity cannot always be accounted for. Media is needed that is easy to understand, flexible, effective, and has been validated by experts to increase knowledge.

Many media are created to increase knowledge, attitudes and practices, such as leaflets, booklets, videos and so on. The research results revealed that one of the media that succeeded in increasing the knowledge of breastfeeding mothers was providing modules [14]. Of the many media that already exist, there is no media that has all aspects of audio, visual and interaction in order to increase knowledge, attitudes and practices, especially regarding early detection of stunting in babies. One of the effective and efficient media for increasing health knowledge in the digital era which can contain more than one aspect such as audio, visual and interaction is an interactive e-booklet [15].

Interactive e-booklets are electronic books that contain pictures, videos, graphics which are packaged attractively so they can be studied easily and can be studied anywhere [16]. Apart from providing an interesting and complete presentation, this media can also directly connect with midwives or medical personnel. Questions or information that is unclear can be asked directly so that the information obtained by the user is valid or correct.

Based on this, researchers created interactive e-booklet media in the form of an electronic booklet, Bunda Banishing Stunting, as a new innovation in creating practical early detection media. The e-booklet is declared feasible for implementation at all levels of society in order to reduce the prevalence of stunting rates in Indonesia.

Research Methods

This research is Research and Development which aims to develop a product in the form of an electronic booklet by providing material from the Busita module by utilizing technology that can be accessed via a link or barcode. Research and Development (R&D) research is a research method that aims to discover, develop, improve and produce products which are then tested until a standardized product is produced. Based on the model by Brog and Gall which has been modified by Sugiono, R&D describes the steps or flow of procedures descriptively to produce new products or develop existing products to increase effectiveness and efficiency[17].

This research focuses on developing an interactive e-booklet based on links or barcodes by providing material designed to help cadres detect stunting in babies which is validated by expert judgment as a media suitability test. Testing of this product was carried out by 5 experts consisting of expert lecturers in the field of child health, midwives and cadres as users. Validity testing using a group of Subject Matter Experts (SME) is usually determined by the Content Validity Ratio (CVR) and Content Validity Index (CVI).

This research used 5 cadres as a pilot study using the Dependent t test as data analysis. The research was conducted in February 2023 at the Bangetayu Community Health Center. This research has complied with research ethics rules and has received ethical services issued by the Health Research Ethics Committee of the Health Polytechnic Ministry of Health Semarang with No. 053/EA/KEPK/2023.

Result and Discussion

Table 1.
Penilaian Validator terhadap Butir Pertanyaan

Q-Item*	Validator					
	I	II	III	IV	V	CVR
Q1	3	3	3	3	3	1
Q2	3	3	3	3	3	1
Q3	3	3	3	3	3	1
Q4	3	3	3	3	3	1
Q5	3	2	2	3	3	0,2
Q6	3	3	2	3	3	0,6
Q7	3	3	2	3	3	0,6
Q8	3	3	3	3	3	1
					CVI	**0,8**

* : Question Item

Table 2.
Expert Validation Test Results

Validator	N	*Use-fulness*	*Ease of use*	*Ease of lear-ning*	*Statisfaction*	Total Skor
I	30	45	63	22	39	169
II	30	47	68	24	42	182
III	30	43	58	22	42	164
IV	30	51	65	27	41	185
V	30	51	69	24	41	184
Total		**237**	**323**	**119**	**204**	**883**

Table 3.
Per-Category Expert Validation Test Results

No	Dimes-ion	Questions	Skor Max	Skor Obs-erv	(%)	Mean
1	*Useful-ness*	8	280	237	84,64	5,92
2	*Ease of use*	11	385	323	83,89	5,87
3	*Ease of learn-ing*	4	140	119	85,00	5,95
4	*Statis-faction*	7	245	204	83,26	5,82
	Total	**30**	**1.050**	**883**	**84,09**	**5,88**

Table 4.
Frequency Distribution of Trial Groups

Tingkat	Kelompok Uji Coba	
	Pre test	*Post test*
	F (%)	F (%)
Pengetahuan		
Good	3 (60,0)	5 (100,0)
Enough	2 (40,0)	0 (0,0)
Not enough	0 (0,0)	0 (0,0)
Sikap		
Positive	2 (40,0)	3 (60,0)
Negative	3 (60,0)	2 (40,0)
Praktik		
Good	0 (0,0)	5 (100,0)
Enough	5 (100,0)	0 (0,0)
Not enough	0 (0,0)	0 (0,0)
Total	5 (100,0)	5 (100,0)

Table 5.
Data Analysis of Trial Group Knowledge, Attitudes, and Practices

Tingkat	Kelompok Uji Coba	*p-value**
	Mean ± SD	
Pengetahuan		
Pre test	76,4 ± 3,714	0,002
Post test	92,6 ± 6,730	
Selisih	16,2 ± 5,357	
Sikap		
Pre test	71,2 ± 3,271	0,001
Post test	85,8 ± 3,271	
Selisih	14,6 ± 3,646	
Praktik		
Pre test	68,4 ± 4,722	0,003
Post test	98,6 ± 3,135	
Selisih	24,4 ± 8,734	

* : *Dependent T Test*

The material validation assessment technique was carried out directly using a questionnaire created by the researcher and by creating a product feasibility letter. The instrument uses a 3-point Likert scale: 1 for not necessary, 2 for useful but not essential, and 3 for essential. Then assessments and conclusions are carried out to maintain the material, reconstruct the material, and delete the material. Apart from that, the USE Questionnaire which was adapted by Lund (2001) was also used to test the usability of using the Busita Interactive E-booklet and then the percentage of answers was carried out[18].

The first validation test carried out was a material validation test using the Content Validity Ratio and Content Validity Index. Lawshe's CVR (Content Validity Ratio) is one method that is widely used to measure content validity. This technique was developed by Lawshe (1975) which is basically a method for measuring agreement between raters or judges about the importance of certain items. Consisting of three options, namely 1. essential, 2 useful but not essential, and 3 not necessary. The formula proposed by Lawshe is:

$$CVR = \frac{(\mathrm{ne} - \mathrm{N}/2)}{(\mathrm{N}/2)}$$

Note: ne is the number of panelists who answered "important", N is the number of panelists.
This formula produces values ranging from +1 to -1, a positive value indicates that at least half of the panelists assess the item as important/essential. the greater the CVR from 0, the more important it is and the higher the content validity [19]. The CVI and CVR tables are described by Azwar in Triandini (2021) as follows:

1. Value range - 1 < x < 0 (Not Good Category)
2. Value range x=0 (Good Category)
3. Value range 0 < x < 1 (Very Good Category)

Lawshe also stated that after all the scores are calculated using the CVR equation, the next step is to calculate the product validity index [20].

The CVI formula is with the following equation:

$$CVI = \frac{Number\ of\ CVRs}{Number\ of\ questionnaire\ items}$$

From table 1 the CVR test, it is stated that all the material in the module is of important or essential value as evidenced by CVR and CVI values of 0 < x < 1 or in the very good or important category.

E-booklet feasibility testing is carried out online with 4 validators and 1 validator face to face or offline. This test is carried out to determine the suitability of the product to be tested. This test uses USE Questions which have been validated with a calculated r between 0.747 - 0.854 and reliability with Cronbach alpha of 0.977. From the results of these data it can be concluded that the research instrument with USE Questions is valid and reliable [21].

The validation test was carried out by 5 experts consisting of midwives, cadres, nutritionists, health promotion workers and lecturers in the field of health information. The results of this assessment are divided using the following usability level table :

1. Range <21% (Very Poor)
2. Range 21-40% (Poor)

3. Range 41-60% (Fair)
4. Range 61-80% (Good)
5. Range 81-100% (Excellent)

Filling in these USE Questions uses a 7 point Likert scale. Starting from strongly disagree to strongly agree. The results of the assessment of 5 experts obtained the following results:

From table 2 feasibility measurement uses usability measurements by calculating the maximum scale score and observation score for each question dimension. The number of respondents involved was 5 people with a 7 point Likert scale and the number of valid questions was 30 questions so that it can be calculated using the usability formula as follows:

$$Score_{max} = N\ x\ nbv\ x\ scale_{Max}:$$

$$Score_{observe} = \sum_{k=0}^{N} \sum_{l=0}^{30} scale$$

Information:

N	= Number of Respondents
nbv	= Item Value
scaleMax	= Maximum Scale
scoreMax	= Maximum Score
ScoreObserv	= Observation

Score Using this formula, the number of respondents was 5 people, the maximum score for each item was 7 points. and the number of valid questions is 30.

Scoremax = 5 x 30 x 7

Scoremax = 1.050.

From table 3 the results of measuring the usability of the USE questionnaire shown in table 4.5 show that the usefulness value is 84.64, ease of use is 83.89, ease of learning is 85.00, and statistics is 83.26. The average of all dimensions is 84.09. So it can be concluded that the Busita Interactive e-booklet product that has been developed can be stated by experts to be very suitable for conducting research trials with limited or small-scale populations to measure knowledge, attitudes and practices of early detection of stunting among health cadres. Apart from the assessment scores, researchers also received input or recommendations from validators, as follows:

Health Information: It's good but instructions or tutorials for use need to be added

1. Midwife: Crosscheck writing and adding instructions for using the application.
2. Health Promotion: Underscore that the tools are only for early detection, not for diagnosis of stunting.
3. Nutrition: Added comparison pictures of toddlers with and without stunting.
4. Cadre: It's good but there are some words that need to be improved

After expert validation and obtaining recommendations from the product design results, the researcher took the next step, namely design revision. Based on the results of the experts' recommendations in table 6, the researchers added how to use the e-booklet and illustrations of comparisons of stunting toddlers. After that, researchers will conduct product trials on a small scale to see the effectiveness of the Busita Interactive e-booklet in changing behavior, namely knowledge, attitudes and practices for early detection of stunting among health cadres.

Figure 1.
Revised Expert Recommendations

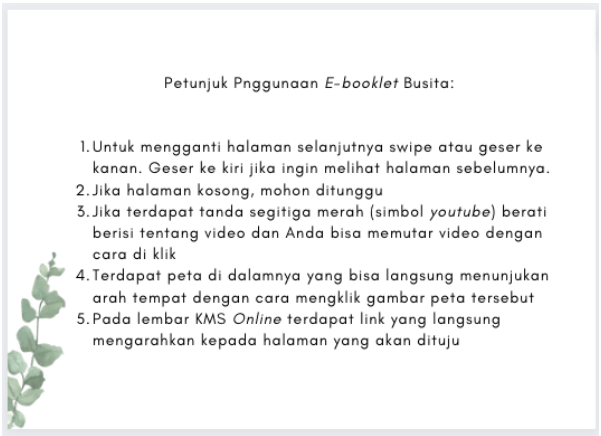

Figure 2.
Revised Expert Recommendations

After carrying out validation and revision, the researchers conducted a small-scale product trial or pilot study on 5 cadres at the Bangetayu Community

Health Center on February 5 2023. From these results, the levels of knowledge, attitudes and practices were obtained in the table below:

In table 4, the trial group consisting of 5 respondents, the level of knowledge has increased from respondents with good knowledge by 3 (60%) to 5 (100%). In the attitude category, respondents with a positive attitude also experienced an increase from the pre-test results of 2 (40%) to 3 (60%). The practice category also experienced an increase from pre-test 5 (100%) respondents in the fair category to all in the good category.

Data normality uses Shapiro Wilk because the data is <50 respondents. Data is said to be normally distributed if $p > 0.05$. In this study, all data in the trial group was declared normal or $p > 0.05$ so the test used parametrics, namely the Dependent T test.

The results of table 5 the analysis using the Dependent T test on 5 respondents in the trial group in the knowledge category showed a p-value of 0.002 or $p < 0.05$, which means that there was an influence of the Busita Interactive e-booklet in increasing the knowledge of respondents in the trial group. The results of the attitude analysis showed a p-value of 0.001 or $p < 0.05$, which means that there was an influence of the Busita Interactive e-booklet on the knowledge attitudes of respondents in the trial group. The results of the practice analysis showed a p-value of 0.003 or $p < 0.05$, which means that there was an influence of the Busita Interactive e-booklet on the knowledge practices of respondents in the trial group.

Conclusion

The Busita module from the CVR test states that all the material in the module is of important or essential value as evidenced by CVR and CVI values of $0 > x > 1$ or 0.8 which can be interpreted as being in the very good or important category. Busita Interactive e-booklet media received a feasibility assessment through an expert validation test with an average score of 84.09 with 4 assessment aspects including usefulness, ease of use, ease of learning, and satisfaction. The results of the pilot study test produced a p-value <0.05, which means that Busita media is effective in measuring knowledge, attitudes and practices for early detection of stunting in babies.

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