Animated video as health promotion tool for community supplementary feeding

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Abstract. The efforts carried out by the POSYANDU under Sawahan health center to increase maternal awareness and knowledge of the importance of supplementary feeding (PMT) and also to monitor children's growth were completed in the form of counselling and distribution of supplementary food. Counselling given once a month in the form of discourse often makes participants lose interest quickly and forget the materials given. Whereas distribution of the free PMT does not encourage participant to independently provide additional food for their children. This research developed an animated video using the prototyping method. The animated video was constructed under the guidance of public health experts and nutritionists. The video supported with animated images and interesting colour combinations is expected to attract the attention of the participants to pay attention to the material provided. Evaluation was conducted by giving pre test – post test and distributing questionnaires. The results of the pre test – post test showed that the nutritional knowledge from 35% participants was increasing. The questionnaire results showed about 93% of health cadres stated that the video could help them in nutrition education. In addition, after the video demonstration was over, health cadres stated that the video can motivate POSYANDU participants to control the child's growth independently and increase creativity in processing food for their children.

1. Introduction

Human needs food that contains balanced nutrition to keep the body healthy. Balanced nutrition is the nutrition consumption derived from carbohydrates, proteins and minerals in proportional amounts according to the needs of one's body [1]. Supplementary feeding containing balanced nutrition must be carried out from the time of pregnancy to the elderly, especially during pregnancy until the first 1000 days of birth [2][3]. If there is an imbalance in the intake of nutrients into the body, a child may experience growth disorder, such as a decrease in intelligence, difficulties to concentrate, shorter stature compared to their age (stunting), obesity, and susceptibility to disease [4].

Nutritional status is the condition of the body which is the end result of the balance between nutrients that enter the body and its utilization [5]. Assessment of nutritional status of children under five years old is based on 3 types of indicators. Then, the results are compared with standard values of WHO (Z Score). Three types of indicators used are the child's weight for age, the child's height for age, and the child's weight for height [6]. Nutritional status of children under five years old based on the three types of indicators can be seen in Table 1 [6].

Table 1. Categories of Nutritional Status of Children Under Five Years Old

Indicator	Nutritional Status	Z-Score
Weight / Age	Severely malnourished	< -3.0 SD
	Moderate malnourished	-3.0 SD until <-2.0 SD
	Normal	-2.0 SD until 2.0 SD
	Over nutrition	>2.0 SD
Height / Age	Severe Stunting	< -3.0 SD
	Moderate Stunting	-3.0 SD until <-2.0 SD
	Normal	≥ -2.0 SD
Weight / Height	Severe wasting	< -3.0 SD
	Moderate wasting	-3.0 SD until <-2.0 SD
	Normal	-2.0 SD until 2.0 SD
	Overweight	>2.0 SD

Children under five years old's nutrition problems in Indonesia in 2016 and 2017 can be seen in Figure 1 [6]. Figure 1 shows that the percentage of malnourished children under five years old in 2016 and 2017 was17.8%. The percentage of stunting children under five years old increased from 27.5% to 29.6%, and the percentage of underweight children under five years old decreased from 11.1% to 9.5%whilethe percentage of obese children under five years old increased from 4.3% to 4.6%. This data shows that there were still quite a number of children under five years old who were experiencing nutritional problems, especially malnutrition and stunting. The government's efforts to overcome the nutritional problems of children in Indonesia are regularly monitoring the nutritional status of children under five years old, providing counseling on nutrition, and providing supplementary feeding through the local POSYANDU. POSYANDU (Integrated Service Post) is one form of community-based health efforts carried out by, from and with the community, to empower and provide facilities to the community to obtain health services for mothers, infants and children under five years old [7]. The existence of POSYANDU is expected to reach the community in the remote area.

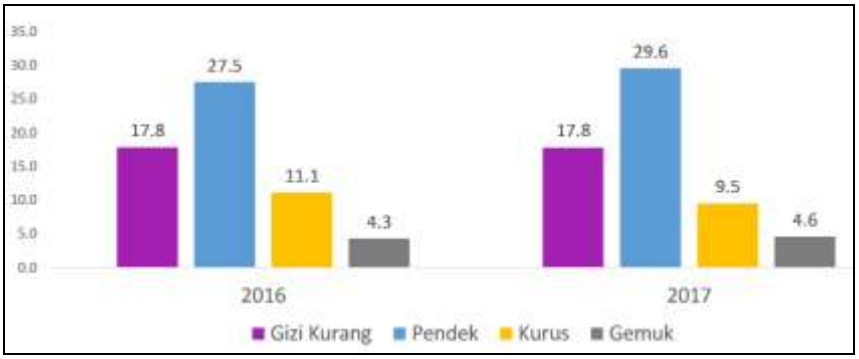

Figure 1. Children under five years old's nutrition problems in Indonesia in 2016 and 2017

Sawahan subdistrict is a region in the city of Surabaya, East Java, Indonesia with the second most population in the city of Surabaya [8]. In 2016, the population of Sawahan subdistrict reached 230,001 people consisting of 64,708 families [9]. The population density of Sawahan subdistrict reached25,454 people / km^2 spread over on 6.93 km^2area[10]. Sawahan Health Center is one of 3 health services in Sawahan subdistrict. Sawahan Health Center manages 76 POSYANDU. Data from the POSYANDU, Sawahan Health Center in 2018 shows that there are still a large number of malnourished children in this area as seen in Table 2. The high number of malnourished children years old in the Sawahan Health Center area is due to the fact that most mothers in that area have limited knowledge of nutrition, so that supplementary feeding that should be given to maintain balanced nutritional in the long term during the child growth period is potentially not implemented by the mother. For this reason, continuous education should be carried out to increase the maternal awareness and knowledge

of the importance of PMT to fulfill children's balanced nutritional intake and independently monitor child's growth as an early detection of child's growth disorders.

The efforts that have been carried out by the POSYANDU in the Sawahan Health Center area were periodically conducting nutrition counselling, monitoring the nutritional status of children through weighing the body and measuring height, sharing experiences between mothers of children under five years old, and distributing supplementary food. POSYANDU usually hold meetings twice a month. The first meeting is to weigh children weight and measure the children height and the second meeting is to provide counselling and free distribution of supplementary food. The meetings that were held twice a month made communication with mother of children under five years old and control on nutrition status of children under five years old less intensive, so it caused several events to be missed.

Table 2. The Number of Malnourished Children Under Five Years Old in Sawahan Health Center Area in 2018

Month	Number of Malnourished Children Under Five Years Old		Month	Number of Malnourished Children Under Five Years Old	
	Male	Female		Male	Female
January 2018	14	17	May 2018	17	16
February 2018	14	17	June 2018	17	16
March 2018	14	15	July 2018	17	15
April 2018	14	15	August 2018	15	14

Based on the results of questionnaires distributed in two POSYANDUs, 83% of mothers never monitored their children's growth, except when weighing children weight and measuring height at the POSYANDU, which was conducted once a month. Actually, the results of this measurement were recorded on each child health card (KMS) which had been distributed to them others. KMS recorded children's growth based on age, weight, and gender in graphical form. This reality shows the lack of mother's awareness to monitor their children's growth.

Based on the direct observations in three POSYANDUs and discussion with cadres, it was found that during this time, counselling was conducted in the form of discourse. Participants usually took their children with them when attending counselling session. Counselling in the form of discourse often made participants lose interest quickly, so children tend to do other activities to attract the attention of their mother. This condition caused in the mother's attention shifting to their children so that counselling material was not delivered well and even forgotten. The results of the observation also showed that there were only a small number of mothers who attended counselling from beginning to the end. Most of the mothers came for a while and went home carrying free supplementary food. This condition showed that mothers came only to get free supplementary food so that it could be said the free distribution of supplementary food did not educate and motivate mothers to independently strive for nutritionally balanced supplementary food for their children.

Based on the results of discussions with several mothers, it was found that the mothers had provided supplementary food for their children so far. The food provided was usually the same as the food eaten daily by the rest of the family. The mothers' problem was their children did not like to eat nourishing food which had been prepared. This was caused by variations in ingredients (types of vegetables and fruit) to make food and food served were limited so that it was not interesting for their children. On the other hand, mothers were lack of creativity in creating new types of food. This condition showed the lack of awareness of the importance of consuming balanced nutritious food and creativity to create new types of food from various kinds of local vegetables and fruits.

This research developed an animated video as a health promotion tool. This video is expected to attract participants 'attention so it could increase participants' knowledge of nutrition, motivate the mothers to prepare balanced nutritious food for their children independently, and increase participants' awareness to monitor their children's growth periodically.

2. Methodology

The research was developed using prototyping method. The first step was to find out the existing problems. It was done by carrying out observations of counselling activities in threePOSYANDUs in the area of Sawahan Health Center, reading the relevant documents, and distributing questionnaires to participants to two POSYANDUs. POSYANDU as the objects of research which were selected using simple random sampling method. Based on the data obtained, the content of the video was organized for developing a prototype. The content of the video was organized under the guidance of public health experts and nutritionists. An animated video was created according to the prototype. To ensure that the video was in accordance with user needs, validation was done. The first validation was carried out by conducting a pre-test and post-test about understanding nutrition at a POSYANDU. The POSYANDU where pre-test and post-test was conducted was determined by simple random sampling method. The second validation was done by demonstrating videos in front of health cadres, and health cadres were asked to fill out the questionnaires afterwards.

3. Results and Discussion

Animated video that was made is expected to enrich the method of delivering knowledge about the importance of providing nutritionally balanced supplementary food for the prevention and curative malnourished children under five years old. This video could be used by health cadres as a counselling tool on nutrition. Videos were designed in 6.02 minutes and supported animated image and interesting colour combinations in the hope that they could attract the attention of mothers and their children so that the mother's concentration on the counselling is not distracted.

The animated video was supplemented with information about the children's needs (see Figure 2), symptoms of malnourished children (Figure 3), Malnutrition factors (Figure 4), and types of supplementary foods for children by age (Figure 5). In addition, the animated video was supplemented with how to read children health card (Figure 6) in the hope that mothers can monitor independently their owned children's growth and was also supplemented with several food recipes (Figure 7) and demonstration of food making for children in hopes of increasing awareness of the importance of consuming various vegetables and fruits as well as increasing the creative ability to process food for their children. This animation video could be played repeatedly independently by mothers so that the material that was missed or forgotten could be recalled.

One of the goals of creating animated video was to increase the maternal knowledge on nutrition. To evaluate the increasing of maternal knowledge, pre-tests and post-tests of understanding of supplementary feeding were conducted at a POSYANDU. Pre test was given before nutrition counselling using animated video and post test was given after nutrition counselling using animated video. In the pre test of the 10 questions, 55% of the mothers could answer 4-6 questions correctly and 45% could answer 7-8 questions correctly. While in the post test of 10 questions, 20% of mothers could answer 4-6 questions correctly and 80% could answer 7-8 questions correctly. These results indicated an increase in knowledge of mothers about nutrition even though no participant could answer 100% of the questions correctly.

To find out the level of usefulness of animated videos for cadres in providing nutritional counselling, video demonstration was conducted in front of 60 health cadres and after that health cadres were asked to fill out questionnaires. Based on the 29 questionnaires that were returned, results were obtained as shown in Table 3. Table 3 shows that about 93% of health cadres agreed that the video helped in conducting nutrition counselling. After the video demonstration was over, health cadres stated that the video can motivate POSYANDU participants to control the child's growth independently and increase creativity in processing food for their children.

Table 3. Results of the Video Animation Questionnaire

Questions	Disagree	Less Agree	Agree
The video helps health cadres to motivate mothers to provide nutritious food for their children	3.45%	3.45%	93.1%
The video helps health cadres educate mothers about how to read children health card	0	6.9%	93.1%

The content of the video is easy to understand	0	6.9%	93.1%
The video has an attractive appearance	0	6.9%	93.1%
The video has a clear and understandable voice	0	3.45%	96.55%

Figure 2. Children's needs

Figure 3. Symptoms of Malnourished Children

Figure 4. Malnourished Factors

Figure 5. Types of Supplementary Foods for Children by Age

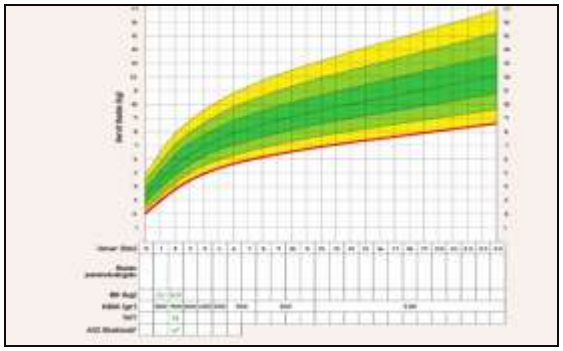

Figure 6. How to Read Children Health Card

Figure 7. Food Recipes

4. Conclusions

In 2018, there were still around 30 malnourished children under five years old in Sawahan Health Center. It shows that there was lack of maternal awareness and knowledge of the importance of consuming balanced nutritious food and lack of control their children's growth. The efforts that had been carried out had several problems. For this reason, in this research, an animated video was developed to overcome the existing problems. To ensure the usefulness of the video for the mothers, pre test – post test about mother's understanding on nutrition were conducted. The results of pre test – post test showed that the animated video could improve nutrition knowledge of the mothers about 35%. In addition, questionnaires were distributed to health cadres after they watched the video to ensure that the video is useful as health promotion tool. The results of the questionnaire showed that about 93% of health cadres agreed that the video helped in conducting nutrition counselling, motivate

POSYANDU participants to control the child's growth independently and increase creativity in processing food for their children. Participants' enthusiasm when they watched the video demonstration indicated the video could attract attention of the participants. This condition is expected to improve the nutritional quality of children in the area Sawahan Health Center in the future.

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It is a great pleasure to welcome all of you to Bali and to the International Conference on Informatics, Technology, and Engineering 2019 (InCITE 2019) held by the Faculty of Engineering, University of Surabaya (UBAYA) in collaboration with The University of Adelaide, Australia and Sirindhorn International Institute of Technology (Thammasat University), Thailand. The first InCITE has been successfully held in Bali, Indonesia in 2017. We are very delighted to host the second InCITE here in Bali, Indonesia again.

There are more than 75 presentations in this conference. We welcome leading experts not only from Indonesia, but also from different parts of the world. The experts will share the knowledge and experiences in the fields of informatics, technology, science, and engineering. The main theme of this conference is **Enhancing Engineering Innovation Towards A Greener Future** in response to several world challenges including sustainable development, global convergence of information and communications technologies, climate change and global warming as well as the depletion of unrenewable natural resources. We hope this conference will provide you a good opportunity to get to know each other better and consolidate bonds of friendship and mutual trust.

We would like to express our sincere gratitude to the Keynote and Plenary speakers, International Scientific Committee, Steering Committee, and Organising Committee for their huge efforts to make this conference successful.

Thank you all for your support and attendance at InCITE 2019. Please enjoy the conference and Bali !

Asst. Prof. Djuwari, Ph.D.

Preface

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Welcome to Bali, Indonesia to all delegates and presenters. It is my pleasure and privilege to welcome all of you to the 2nd (second) International Conference on Informatics, Technology, and Engineering 2019 (InCITE 2019) held by the Faculty of Engineering, University of Surabaya (UBAYA) in collaboration with The University of Adelaide, Australia and Sirindhorn International Institute of Technology (Thammasat University), Thailand.

InCITE 2019 has received more than 75 papers to be presented in this conference. All papers represent four following parallel clusters: Green Design and Innovation, Green Manufacturing and Green Processes, Power System and Green Energy Management, and The Role of IT in Innovation Enhancement. Each cluster supports the main theme of the conference, which is **Enhancing Engineering Innovation Towards A Greener Future.** The engineering innovation is the key to increase our awareness in maintaining the sustainable growth and development in the world.

The Organising Committee of InCITE 2019 would like to express our sincere gratitude for the tremendous supports and contributions from many parties. The supports from The Faculty of Engineering of UBAYA, keynote and plenary speakers, our International Scientific Committee, the Steering and Organising Committees are really acknowledged.

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Power System and Green Energy Management

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PARALLEL SESSION 3B

Venue: **KELAPA & KEMANGI**

DAY/DATE: Friday, August 23, 2019

Time: 08.15 – 10.00

No	Paper ID	Title	Authors	Signature
1	118	Organic-inorganic nanocomposite membranes for molecular separation and bioapplications	Jingwei Hou	
2	120	Fluazinam potential as a fungicide in liquid culture system for the growth of Haematococcus pluvialis microalgae	Judy Retti Witono	
3	5	A Systematic Literature Review for Developing Sustainability Assessment Tool (In Formulating the State of the Art and Future Direction)	Yenny Sari	
4	29	An empirical study of how the deployment of lean sigma can reduce its enemies: waste, overburden and defect	Yenny Sari	
5	55	Combined Structural Equation Modeling – Artificial Neural Network Model for Predicting Customer Loyalty	M. Arbi Hadiyat	
6	63	Animated Video as Health Promotion Tool for Community Supplementary Feeding	Susana Limanto	
7	128	The Integration of Social Responsibility into Business Operation: Case Study of Indonesian Manufacturing Industry	Esti Dwi Rinawiyanti	

Moderator : Esti Dwi R.

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