



## The Effectiveness of Nutrition Education about Stunting Using Video Media on The Knowledge and Attitudes of Mothers of Toddlers

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### ABSTRACT

Stunting is still a global health emergency, threatening children's health and productivity in the future. Stunting in children begins in the family environment. Mothers contribute fully to optimal child growth and development. This study aims to determine the effectiveness of nutrition education about stunting using video media on the knowledge and attitudes of mothers under five. A quasi-experimental study with a pre-post test approach with a control group design was conducted in February – April 2023 at the Teluk Lingga Sangatta Health Center, East Kutai, East Kalimantan. A total of 36 samples were involved in this study by purposive sampling by taking into account inclusion and exclusion criteria. Data were analysed using paired t-tests and independent t-tests. There were differences in knowledge before and after being given nutrition education videos with a value of  $p=0.000$  and differences in attitudes before and after being given nutrition education videos with a value of  $p=0.000$ . There are differences in knowledge before and after nutrition education with leaflet  $p=0.000$ . There are differences in the attitude of mothers of toddlers before and after nutrition education with leaflet  $p=0.000$ . Nutrition education videos are more effective in increasing knowledge compared to the  $p=0.000$  leaflet. Nutrition education videos are more effective in improving attitudes compared to leaflet  $p=0.001$ . Nutrition education videos about stunting are more effective in increasing knowledge and attitudes about stunting.

### Key Messages:

- Stunting is still a priority health problem in Indonesia
- Mothers have a big role in determining the quality of their children
- Nutrition education is considered effective as an effort to prevent stunting problems

### Introduction

Stunting in children is defined as a disorder of growth in height or body length of children that is not following their age(1). Children are said to be stunted if the results of measuring height or body length based on age are below -2 standard deviations of child growth and development based on the median value of World Health Organization (WHO) child growth standards(2). Stunting is one of the major nutritional problems experienced by toddlers in the world today(3). Globally, in 2019 it was reported that around 144 million children under five (21.3%) were stunted. Of the world's 144 million children under five who are stunted, more than half come from low- and middle-income countries and only a quarter come from low-income countries(4). Indonesia as a developing country is classified as a health factor including stunting (5), and including countries with the fifth largest contributor to stunting worldwide (6).

Basic Health Research (2018) reported a national stunting prevalence of 30.8% (7). This report shows 1 in 3 Indonesian children under five are stunted (4). The latest report according to the Indonesian Nutritional Status Survey for 2019, 2021 and 2022 shows that the total stunting children under five in Indonesia are 27.7%, 24.4%, and 21.6% (8). Although it has decreased from year to year, it is still relatively high based on the WHO standard of 20% (9). The Indonesian Nutritional Status Survey Report (2022) in East Kalimantan shows stunting at 23.9% stunting, while East Kutai as one of the districts in East Kalimantan shows a stunting prevalence of 24.7% (8). Higher when compared to

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provincial figures. The working area of the Teluk Lingga Health Center, which is the location of the study, was reported in 2019 at 18.6%. This is the Public health centre with the second-highest stunting rate. In 2020 and 2021, there were decreases to 14.8% and 14.9%. In 2022, stunting cases increased again to 15.2% (East Kutai Regency Health Office, 2019). It is a marker of chronic malnutrition that affects millions of children worldwide and poses a major risk to their health and future [1].

Various factors cause stunting in Indonesian toddlers. Recent studies suggest that exclusive breastfeeding, sanitary hygiene, children's diet, mother's height, mother's knowledge, maternal attitudes and maternal behaviour have been proven as risk factors for stunting in children [2] [(2)(10)(10)(5)(5)(11)(11)]. Malnutrition at an early age increases infant and child mortality, while stunting is estimated to cause around one million child deaths annually [12]. Stunting causes short-term and long-term losses. The adverse effects in the short term can also cause disorders of the brain, intelligence, impaired physical growth, and metabolic disorders in the body. Meanwhile, in the long term, the adverse effects caused are decreased cognitive ability and learning achievement, decreased immunity that increases disease susceptibility, high risk of diabetes, obesity, heart and blood vessel disease, cancer, stroke, disability in old age, and poor quality of work which leads to low economic productivity [12] [4] [(12)(4)(4)(13)(13)(3)]. This will threaten Indonesian children and become the main task of the State in taking policies to reduce the problem of stunting.

Bustami & Ampera's (2020) study in Aceh proposes the relationship between maternal knowledge and the incidence of stunting [14]. Knowledge is the initial capital of a mother who is used to provide adequate care to her children. Lack of comprehensive knowledge can be one of the causes of stunting [15]. Field studies have been conducted on 10 people who have stunting toddlers, as many as 4 people do not understand what is meant by stunting and how to prevent stunting that should be done by mothers, 3 people prefer to give formula milk to their children from birth for reasons of busyness or lack of breast milk so that mothers feel their babies are not full and switch to formula milk and 3 mothers do not bring their children to Integrated Healthcare Center and do not care about growth and development his son until his son became stunted.

Currently, the use of media for providing information is interesting to do, one of which is by using educational videos, videos that are made interesting and full of information into a spectacle that can provide interesting education listened to by mothers. Research conducted by Sartika and Purnanti (2021) found that booklet and video educational media are effective in improving cadre skills in the early detection of stunting in infants and educational media with videos are more recommended in providing education because the absorption of information is more effective by using the senses of vision and hearing in the form of videos compared to using the sense of sight [16].

This study aims to determine the effectiveness of nutrition education about stunting using video media on the knowledge and attitudes of mothers under five in the Teluk Lingga Health Center Work Area.

## **Methods**

This type of research is quantitative research using the quasi-experiment method with a pre-post test approach with a control group design. In this study, mothers of toddlers were first given tests. Initial (pre-test) to find out the extent of knowledge and attitudes of mothers of toddlers regarding stunting. After being given the initial test, then the mothers of toddlers in the intervention group were given interventions, namely video media education, and in the control group, they were given leaflets about stunting. After completion of education, mothers of toddlers are given a final test (post-test) to find out the extent of the effectiveness of nutrition education using video media on the knowledge and attitudes of mothers of toddlers. The study was conducted in February – April 2023 at the Teluk Lingga Sangatta Health Center, East Kutai, East Kalimantan. The population in this study is all mothers who have stunted toddlers at the Teluk Lingga Health Center in the last 1 year from January to December 2022 totalling 114 toddlers. The sample size was 36 people, 18 control groups and 18 intervention groups. Purposive sampling by taking into account inclusion and exclusion criteria. The inclusion criteria are mothers who have stunting toddlers, mothers of toddlers who come to the Integrated Healthcare Center in the working area of the Teluk Lingga Health Center, mothers of toddlers who have a Card Towards Health (KMS) to find out the nutritional status of their babies, and mothers of toddlers who can read and write or at least the last education of elementary school. The exclusion criteria were mothers of toddlers who refused to be respondents, mothers who could not hear or see (for videos) so that it was difficult to communicate, and mothers who at the time of the research process were not involved until the final stage.

The independent variable in this study is nutrition education through video media. The dependent variables are the knowledge and attitudes of mothers of toddlers. Nutrition education

through videos shows the definition of stunting, the characteristics of stunting, the causes of stunting, the impact of stunting, children's diet, how to prevent stunting and all things related to stunting. Meanwhile, mothers' knowledge is assessed based on mothers' understanding of stunting, causes, impacts and prevention of stunting. While the attitude assessed is the statement of toddler mothers regarding stunting prevention, by consuming healthy and nutritious foods, and rich in animal protein.

Data analysis is carried out with the help of computer software using the SPSS 25 program. The data analysis used was univariate and bivariate. Univariate analysis aims to explain or describe the characteristics of each research variable. Bivariate analysis is used to see relationships and differences between variables. The data analysis test was used to see differences in knowledge and attitudes before and after the intervention using paired t-tests because the data was normally distributed. To see the differences in knowledge and attitudes between the groups given the video and leaflet, an independent t-test was used because the data was normally distributed.

### **Ethical Clearance**

Health Polytechnic Research Ethics Commission, Ministry of Health, East Kalimantan with number: DP.04.03/6.10/15498/2023.

### **Results**

The characteristics of the respondent are the inherent characteristics of the respondent. Characteristics of respondents include age, education level, occupation, and parity. Table 1 shows that most respondents in the experimental group were between 20-35 years old, namely 10 people (55.6%), most high school education was 11 people (61.1%), most IRT jobs were 12 people (66.7%), most mothers were multiparity as many as 11 people (61.1%). While the control group of respondents mostly aged between 20-35 years is as many as 8 people (44.4%), most high school education is 11 people (61.1%), most IRT jobs are 11 people (61.1%), most mothers are multiparity as many as 10 people (55.6%).

**Table 1 Characteristics of Respondents**

Characteristic	Intervention Group		Control Group	
	n	%	n	%
<b>Mother's Age</b>				
< 20 years	5	27.8	6	33.3
20-35 years	10	55.6	8	44.4
> 35 years old	3	16.7	4	22.2
<b>Mother's Education</b>				
Elementary School	2	11.1	1	5.6
Junior High School	4	22.2	6	33.3
High School / Vocational School	11	61.1	11	61.1
University	1	5.6	2	11.1
<b>Mother's Work</b>				
Housewife	12	66.7	11	61.1
Civil servants	1	5.6	3	16.7
Honor Employees	2	11.1	1	5.6
Self-employed	3	16.7	3	16.7
<b>Parity</b>				
Primipara	5	27.8	6	33.3
Multiparity	11	61.1	10	55.6
Grand multipara	2	11.1	2	11.1
<b>Total</b>	<b>18</b>	<b>100</b>	<b>18</b>	<b>100</b>

Table 2 shows the knowledge score before being given nutrition education videos in the intervention group obtained data mean value of 7.39, a standard deviation value of 2.404. Meanwhile, the knowledge score after being given nutrition education videos obtained data on the average value of 19.72 standard deviation values of 2.608. The statistical test obtained p-value results of  $0.000 < \alpha 0.05$  which showed that  $H_0$  was rejected, which means that there are differences in knowledge before and after being given nutrition education videos about stunting to mothers under five in the Teluk Lingga Health Center work area. The attitude score before being given nutrition education videos obtained an

average value data of 31.17 and, a standard deviation value of 7.205. The attitude score after being given nutrition education videos obtained an average value data of 57.28, with a standard deviation value of 2.473. The statistical test obtained p-value results of  $0.000 < \alpha 0.05$  which showed that  $H_0$  was rejected which means that there were differences in attitudes before and after being given nutrition education videos about stunting p there were mothers of toddlers in the Teluk Lingga Health Center work area.

The knowledge score before nutrition education using leaflets in the control group obtained data with an average value of 8.00 and, a standard deviation value of 2.404. Meanwhile, the knowledge score after being given nutrition education using leaflets obtained an average value data of 16.06 with a standard deviation of 2.608. Statistical tests obtained p-value results of  $0.000 < \alpha 0.05$  which showed that  $H_0$  was rejected which means that there are differences in knowledge before and after nutrition education about stunting using leaflets there are mothers of toddlers in the working area of the Teluk Lingga Health Center. The attitude score before nutrition education using leaflets obtained an average value data of 34.67 and, a standard deviation value of 7.205. The attitude score after being given nutrition education using leaflets obtained an average value data of 50.67, with a standard deviation value of 2.473. Statistical tests obtained p-value results of  $0.000 < \alpha 0.05$  which showed that  $H_0$  was rejected, which means that there were differences in attitudes before and after being given nutrition education about stunting using leaflet p there are mothers of toddlers in the working area of the Teluk Lingga Health Center.

**Table 2 Differences between variables (Intervention Group and Control Group)**

Variable	Intervention Group (n=18)			Control Group (n=18)		
	Mean	SD	p	Mean	SD	p
<b>Knowledge</b>						
Before					2.404	0.000
After	7.39	2.404	0.000	8.00	2.608	
<b>Attitude</b>						
Before					7.205	0.000
After	31.17	7.205	0.000	34.67	2.473	
	57.28	2.473		50.67		

Table 3 shows the analysis using an *independent t-test* to see the effectiveness of knowledge between those provided nutrition education using videos and nutrition education using leaflets, statistical test results obtained p-value results  $0.000 < \alpha 0.05$  which shows that  $H_0$  was rejected which means that there is a difference in knowledge between those provided education using videos and education that uses leaflets, which means nutrition education using videos is more effective in increasing knowledge compared to nutrition education using leaflets for mothers of toddlers in the Teluk Lingga Health Center work area.

The attitudes were analyzed using an *independent t-test* to see the difference in attitudes between those given nutrition education using videos and nutrition education using leaflets there was a difference of 6.611, and the results of statistical tests obtained p-value results of  $0.001 < \alpha 0.05$  which showed that  $H_0$  was rejected which means there is a difference in attitude between those who are given education using videos and education using leaflets, which means that nutrition education using videos is more effective in improving attitudes compared to nutrition education using leaflets there is mothers of toddlers in the working area of the Teluk Lingga Health Center.

**Table 3 Effectiveness between variables**

Variable	Mean	SD	p
<b>Knowledge</b>			
Nutrition Education with Videos	19,72	1,121	0,000
Nutrition Education with Leaflet	16,06		
<b>Attitude</b>			
Nutrition Education with Videos	57,28	1,913	0,001
Nutrition Education with Leaflet	50,67		

## Discussion

### Nutrition Education Using Videos to Increase Knowledge

Knowledge is the result of knowing a person after they have sensed a particular object(17). The mother's knowledge is assessed based on the mother's understanding of the understanding, causes,

impacts and prevention of stunting. The results showed that there was a significant difference between knowledge about stunting before and after being given nutrition education videos with  $p$  values of  $0.000 < \alpha < 0.05$ . This proves that nutrition education using videos affects increasing knowledge about stunting where there is an increase in knowledge scores after being given nutrition education using videos with an increase in scores of 12,333.

The results of this study were corroborated because after being given nutrition education using videos, mothers of toddlers who initially had less knowledge were seen from the average score before education using videos with an average of 7.39 was low because the average respondent could only get the correct 7 of the 25 question items asked with the lowest score 3 and the highest score 1:3. After being given education using videos, there was an increase in knowledge where the average score was 19.72 out of 25 question items with the lowest score of 13 and the highest score of 2, 4. This research is in line with Ernawati's review study (2022) which suggests that video-based education increases mothers' knowledge related to stunting (18). The results showed that before the intervention, the knowledge of mothers under five about stunting was still low respondents knew what stunting was but many did not know the signs of stunting, the causes of stunting, the impact of stunting and how to prevent stunting. According to the researchers' assumptions, this is due to the lack of information received by mothers of toddlers about stunting. After being given nutrition education about stunting, there was a significant increase in knowledge where initially mothers only knew what stunting was, after intervention respondents better understood the signs of stunting, the causes of stunting, the impact of stunting and how to prevent stunting. Maternal knowledge is positively related to the health of her children(19). This study is in line with the study of Simanjuntak et al (2019) in Bengkulu which showed mothers with low knowledge was associated with children's height index. (20).

Health promotion media should keep up with the times. Currently, audio-visual media of video type are widely used to increase the level of knowledge of the community. The advantages of video include being able to convey objects or events in their original state. Audio-visual methods can also present material that is theoretical to be practical. Therefore, the information conveyed through videos can be understood easily and comprehensively and has a motivational effect on the learning process(21). Success in education can be influenced by several factors, one of which is educational media. Media is used as a tool for delivering educational messages by explaining facts, procedures, and actions more systematically. Video educational media convey messages in the form of stories in straightforward voices accompanied by images that exemplify behaviours that should and should not be done(16).

In addition, we found that respondents' knowledge initially varied, this was influenced by the age at which older respondents had a better understanding of stunting. Associated with the results of this study respondents' knowledge there was a difference before and after could be because most respondents were aged 20-35 years. A person's knowledge is influenced by age. This is in line with the study of Rahmawati, Nurmawati, and Permata Sari (2019) which suggests that age is related to stunting knowledge (22). In addition to age, according to research assumptions, if it is related to the level of education, the number of respondents is most likely to be with the level of high school education, this is what causes an increase or difference in knowledge before and after the intervention. With higher education, a person will tend to get information, both from others and from mass media. Education deals with knowledge [(22)(23). We found that the success of education using videos is because respondents can be invited to collaborate when given education by replaying the videos provided so that when the evaluation is carried out it can increase mothers' knowledge about stunting.

### **Nutrition Education Using Videos on Attitudes**

Attitude is a positive or negative response from someone. The attitude assessed was the statement of the mother of the toddler regarding the prevention of stunting, by consuming healthy and nutritious foods, and rich in animal protein. The results showed that there was a significant difference in attitudes about stunting before and after being given nutrition education videos with  $p$  values of  $0.000 < \alpha < 0.05$ . This proves that nutrition education using videos affects increasing attitudes towards stunting where there is an increase in attitude scores after being given nutrition education using videos with an increase in scores of 26,111. This research is in line with Kurniatin and Zakiyya's (2022) study which found differences in attitudes after being given education using videos for pregnant women(24).

A person's attitude towards an object is a feeling of support or partiality or a feeling of not supporting or taking sides in that object. Individuals are ambivalent towards a particular object, event, person, or idea. Attitudes represent relatively sedentary feelings, beliefs, and behavioural tendencies(25). If you have a good and correct attitude about stunting, you will respond to the problem of stunting with a negative attitude towards stunting. After nutrition education using videos, there was

an increase in attitudes towards stunting where mothers of toddlers have a good response to stunting and are responsible for the risk of stunting in their toddlers.

According to researchers, nutrition education can change the way mothers perceive the importance of food intake given for children's health to avoid stunting. So far, mothers assume that as long as children want to eat snacks, there is no important problem, there are those consumed by children that do not affect their nutrition, for some children who do not want to eat, then mothers will give snacks that children like such as snacks at stalls which do not contain enough nutrition in children, even some types of snacks are not safe for consumption by children because they contain dyes and ingredients Preservatives that are not good for the health of their children. A media can be said to be effective if the media facilitates the smooth delivery of information and media selection in conveying the message made by the communicator can be received by the communicant clearly, so that the intention of the communicator can be achieved(26). This study provides evidence of the difference between video education and attitude. This is in line with the study of Anggraini, Siregar, and Dewi (2020) which suggests the influence of video education on mothers' attitudes about stunting prevention (21).

### **Nutrition Education Using Leaflets on Knowledge**

The results showed that there was a significant difference in knowledge about stunting before and after education was given using leaflets seen from the p-value of  $0.000 < \alpha 0.05$ . This proves that education using leaflets affects increasing knowledge about stunting whereas there is an increase in knowledge scores after being given education using leaflets. This research is in line with a study by Wulandari et al (2020) in Temanggung which found a significant relationship between educational media using leaflets and increased knowledge(27).

Based on the results of research before nutrition education using leaflets, respondents' attitudes were mostly negative seen from the mother's response to stunting events because there are still many mothers who consider that feeding with balanced nutrition does not have too much impact on stunting because toddlers who do not want to eat are considered a common problem in toddlers, they assume that after growing up children will start eating. After being given nutrition education, many changes in mothers' attitudes towards stunting, most of which have changed their views on stunting and understanding of the importance of nutrition to prevent stunting in children.

Many things affect the success of the implementation of education, especially regarding stunting, including adequate facilities so that the implementation of education can be carried out optimally. In addition, different levels of education in the community are some of the other factors that are very influential because of course they have different mindsets in dealing with this. Education is a process that includes intellectual, psychological, and social dimensions and activities needed to improve the ability of individuals to make decisions consciously that affect the well-being of self, family and society. This process is based on scientific principles that make it easy to learn and change behaviour, both for health workers and service users. Educational boundaries are planned efforts to change the behaviour of individuals, groups, families, and communities.

Leaflet media is written media that contains the delivery of health messages through a piece of paper has two or more folds and contains information in the form of sentences pictures or both(27). We found the success of educating mothers about stunting using leaflets is because leaflets are one of the effective media in providing information because leaflets activate vision, hearing and understanding, as stated by Notoatmodjo (2012) information conveyed through the eyes and ears will be easier to understand and remember because it stimulates the senses of hearing and sight(17).

### **Nutrition Education Using Leaflets on Attitudes**

The results showed that there were significant differences in attitudes about stunting before and after education was given using leaflets seen from p values of  $0.000 < \alpha 0.05$ . This proves that education using leaflets affects increasing attitudes about stunting where there is an increase in attitude scores after being given education using leaflets. This research is in line with the latest study by Sumarni, Azzahroh, and Suprihatin (2023) which suggests an increase in knowledge of mothers' attitudes after receiving nutrition education using leaflets(25).

Based on research data on groups provided with education using leaflets, before the intervention, respondents' attitudes towards stunting were still negative because they considered the problem of stunting unimportant and did not occur in their children so they ignored information about stunting problems. After an educational intervention using leaflets, there was a change in mothers' attitudes about stunting and mothers considered information about stunting important to prevent stunting because children born healthy can become stunted because they are not good at providing nutritious food.

The leaflet is one of the props arranged based on the principle that human knowledge is received or captured through the five senses. Leaflets have the advantages of durable information, covering many people, not high cost, not needing electricity, being carried easily, causing a sense of beauty, facilitating understanding, and increasing the passion for learning(28). According to the researchers' assumptions, nutrition education, namely providing better information will affect the mother's attitude to better provide nutritious food to meet the needs of children. Changes in maternal attitudes will affect maternal behaviour about the importance of nutritional needs to prevent children from being stunted.

### **The Effectiveness of Nutrition Education Using Videos and Leaflets on Knowledge and Attitudes**

The results showed that there was a significant difference in knowledge about stunting between groups given nutrition education using videos and leaflets with a p-value of 0.000. This proves that education using videos is more effective than education using leaflets to increase knowledge about stunting. This research is in line with the study of Herlinadiyaningsih and Arisani (2022) which suggests that videos are more effective in increasing knowledge(29)

The results showed that there was a significant difference in attitudes about stunting between groups given nutrition education using videos and leaflets with a p-value of 0.001. This proves that education using videos is more effective than nutrition education with leaflets to improve attitudes about stunting where there is a difference in scores, namely the average attitude score of groups given nutrition education with videos is 6,611 higher than the average attitude score given nutrition education with leaflets.

The formation of a new domain of behaviour, especially in adults, begins in the cognitive domain, in the sense that the subject knows in advance the stimulation in the form of material or objects outside it, giving rise to new knowledge in the known subject. Finally, stimuli that are objects that have been fully known and realized will cause a further response, namely in the form of action (action) to or in connection with stimulation or the object earlier. However, in reality, the stimulation the subject receives can immediately lead to Action (30).

Audio-visual media is a medium to convey messages that activate the sense of sight and sense of hearing from the target. Audio-visual media is a type of media that contains elements of audible sound and elements of images that can be seen. Forms of audio-visual media include video recordings, films, sound slides, and so on. Audio-visual educational media provide good results for the task of recognizing, recalling, and relating facts and concepts of something(31).

Video media is more effective against changes in knowledge and attitudes towards changes in attitudes towards the dangers of drugs. This reflects the absorption of information more effectively by using the senses of vision and hearing in the form of video than using only the sense of sight alone in the form of leaflets. Film or video media is a medium that can present messages that can be informative, educative or instructional. Video educational media is excellent for presenting theory and practice, saving time for explaining(31). Increased knowledge and attitudes are forms of knowing results caused by the respondent's learning process after sensing certain objects and awareness of evaluation. The sensing in question can be through a single sense or a combination of the senses of sight, hearing, touch and even smell. Video media is a media that combines the use of the senses of sight and hearing so that it can further increase one's interest in learning(24).

### **Conclusion**

There are differences in knowledge and attitudes of mothers of toddlers before and after being given nutrition education videos in the Teluk Lingga Health Center area. There are differences in knowledge and attitudes of mothers of toddlers before and after being given nutrition education with leaflets. Nutrition education videos are more effective in increasing knowledge compared to leaflets for mothers of toddlers while nutrition education videos are more effective in improving attitudes compared to leaflets for mothers of toddlers in the working area of the Teluk Lingga Health Center. This finding is scientific evidence of the importance of education from various innovative and easily accepted media by the community, in addition to the need to increase counselling activities carried out periodically so that public understanding can increase that it will affect healthy community behaviour.

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