

## **Differences in Mother's Knowledge, Energy Consumption, and Protein in Stunted Toddlers between Nutrition Education with Video Media and Without Video Media in Purwodadi Village, Blimbing District, Malang City**

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### **ABSTRACT**

**Introduction:** Mothers' lack of understanding regarding MP-ASI will affect toddlers' nutritional intake. Nutrition education using video media can increase mothers' knowledge of the importance of meeting toddlers' nutritional intake.

**Objective:** To analyze differences in maternal knowledge levels, levels of energy consumption, and protein in stunted toddlers between nutrition education with video media and without video media in Purwodadi Village, Kec. Blimbing, Malang City.

**Method:** The research method used is a quasi-experimental method with a two-group pre and post-test design, a purposive sampling technique. The total sample obtained was 18 mothers of toddlers who were divided into two groups. Education was carried out three times, and each time the education was carried out for 60-90 minutes. The knowledge of mothers of toddlers, energy, and protein consumption of toddlers before and after were tested using the Paired Sample T-Test because the data was normally distributed, while the knowledge of mothers of toddlers, energy, and protein consumption of toddlers between the treatment and control groups used the Independent Sample T-Test.

**Result:** The research results showed that the average knowledge before education was ( $62.2 \pm 11.7$ ) and after ( $92.8 \pm 6.1$ ) in the treatment group, while in the control group, the average knowledge of nutrition before education was ( $62.2 \pm 11.7$ ) and after ( $79.4 \pm 6.8$ ). The average energy consumption of toddlers in the treatment group before education was ( $66.3 \pm 11.6$ ) and after ( $98.5 \pm 8.6$ ), while in the control group, the average energy consumption of toddlers before education was ( $70.9 \pm 26.3$ ). and after ( $88.2 \pm 26.3$ ). Apart from that, the average protein consumption in the treatment group before education was ( $70.3 \pm 13.1$ ) and after ( $96.2 \pm 11.0$ ), while in the control group, the average protein consumption before education was ( $76.6 \pm 23.5$ ). and after ( $83.1 \pm 21.9$ ). Apart from that, there were differences in nutritional knowledge of mothers of toddlers, energy consumption, and protein for toddlers between education with video media and without video media ( $p < 0.05$ ). These results are presented in Tables 8, 10, and 12 to see any differences between the treatment and control groups.

**Conclusion:** This research concludes that there are differences in maternal knowledge, energy consumption, and toddler protein between nutrition education with video media and without video media.

**Keywords:** Level of Energy Consumption; Level of Knowledge; Level of Protein Consumption; Stunting Toddlers

## INTRODUCTION

Stunting is still a public health problem in developing countries like Indonesia with a fairly high prevalence. Stunting is a condition where the length or height of a toddler is less than his age. A toddler is said to be stunted if the Body Length by Age (PB/U) or Height by Age (TB/U) index is between  $-3$  SD to  $<-2$  SD [1].

The prevalence of stunting in Indonesia is 21.6% or around four million children under five suffer from stunting. The prevalence of stunting at the national level shows a decrease of 2.8%, wherein in 2021 the prevalence of stunting in Indonesia was 24.4% and in 2019 it was 27.7%. Meanwhile, the prevalence of nutritional status of toddlers in East Java based on height for age (TB/U) in the short and very short categories is 19.2%. The prevalence of stunting in Malang City is 18.0%, and this figure is still above the target, namely 14% [2]. Based on data contained in the Polowijen Community Health Center, Kec. Blimbing toddlers who experienced stunting reached 131 out of 1,078 toddlers whose height was measured (12.2%). The level of community participation in the nutrition improvement program at the Polowijen Community Health Center in 2021 is relatively low. This can be proven by the percentage of toddlers' achievements being weighed which is still far below the target, namely 22.9% or 1,370 toddlers.

Many factors contribute to stunting in toddlers, including inappropriate parenting patterns for toddlers, such as letting toddlers get full because the toddler's mother doesn't pay enough attention to her toddler's nutritional needs, and even letting her toddler go if he doesn't want to eat. The next factor is the lack of availability and security of family food, this is closely related to the low economic level of the community. The existence of food restrictions during pregnancy and breastfeeding is also the cause of toddlers experiencing stunting [3].

Apart from that, stunting can occur due to maternal knowledge. Lack of knowledge influences the lack of nutritional intake of toddlers so it has an impact on the growth of toddlers. Overcoming stunting in toddlers can be done by changing eating patterns and educating mothers of toddlers, which is something that supports changes in food consumption according to toddlers' nutritional needs.

One method of nutrition education that can be used is counseling. The aim of conducting nutrition education is to increase the family's ability to prevent and overcome nutritional problems for their family members. That way, the knowledge and attitudes of someone who receives education will increase compared to someone who does not receive education [4].

The media that is considered appropriate for use in education is video. Video is a medium that attracts attention and can stimulate more senses, so it can provide more optimal results. Videos can also be played repeatedly without changing the content of the material [5]. One of the advantages of video as an educational medium is that it can be more easily accepted by respondents because it is directly linked to the senses of sight and hearing. According to research by experts, the sense that transmits the most knowledge to the brain is the sense of sight, approximately 75% to 87%, 13% is through the sense of hearing and the other 12% is channeled through other senses [6].

Based on the background, the researchers were interested in researching the differences in maternal knowledge, energy consumption, and protein of stunted toddlers between nutrition education with video media and without video media in Purwodadi Village, District. Blimbing, Malang City.

## METHOD

This research is a type of research with an experimental method with a two-group pre and post-test design. This research was conducted in Purwodadi Village, Blimbing District, Malang City in November – December 2023.

The sampling technique uses purposive sampling where the sample is based on previously known characteristics or characteristics of the population, as stated in the inclusion criteria, namely 1) Toddlers residing in Purwodadi Village, Blimbing District, Malang City, 2) Toddlers aged 6-24 months with short nutritional status. and very short, 3) Toddlers in good health, 4) Mothers of toddlers who can read and write, 5) Mothers of toddlers who are willing to become research respondents totaling 18 respondents divided into two groups, namely 9 respondents each given education using video media and 9 Respondents were given education without video media.

Nutrition education is carried out once/week for 3 weeks with the duration of each nutrition education being 60-90 minutes. Education in the first week was carried out by providing questionnaires on respondents' characteristics and knowledge before being given education, then interviews were conducted regarding consumption patterns using the SQ-FFQ form, followed by explaining material related to the meaning of MP-ASI. In the second week of education, a review of the educational material in the first week was carried out and continued to explain material related to the principles of MP-ASI (frequency of giving MP-ASI according to age, types of recommended food ingredients, and the amount of food intake needed by toddlers according to their age). In the third week of education, a review of the material presented in the first and second weeks was carried out, then material was provided on how to prepare the MP-ASI menu correctly, then continued by providing a

knowledge questionnaire after being given education, and interviews were conducted regarding consumption patterns using the SQ-FFQ form. The final step is monitoring and evaluating the mother's understanding and the toddler's energy and protein consumption.

The independent variable in this study is nutrition education with video media and without video media, while the dependent variables are maternal knowledge, energy consumption, and protein for stunted toddlers. The method for collecting knowledge data is through a mother's knowledge questionnaire with 20 questions. The method for collecting data on energy, and protein consumption is through interviews using the SQ-FFQ form. The analytical method used to determine differences in maternal knowledge, energy consumption and toddler protein before and after being given education is the Paired Sample T-Test. Meanwhile, to analyze the differences in maternal knowledge, energy consumption, and protein of stunted toddlers between nutrition education with video media and without video media, it was tested using the Independent T-Test.

## RESULTS

### Toddler's Age

**Table 1.** Distribution of stunted toddlers based on age

No	Age (Month)	Number of Respondents			
		Treatment Group		Control Group	
		n	%	n	%
1	6-11	0	0	1	11,1
2	12-24	9	100	8	88,9
	Amount	9	100	9	100

Table 1. shows that the 12–24-month age group has the highest number of stunted toddlers, namely 9 toddlers (100%) in the treatment group and 8 toddlers (88.9%) in the control group. Toddlers aged 12-24 months are more susceptible to stunting.

### Toddler's Gender

**Table 2.** Distribution of stunted toddlers based on gender

No	Gender	Number of Respondents			
		Treatment Group		Control Group	
		n	%	n	%
1	Boy	6	66,7	6	66,7
2	Girl	3	33,3	3	33,3
	Amount	9	100	9	100

Table 2 shows that the highest number of toddlers were boys, both in the treatment group and the control group, namely 66.7%. These results show that male toddlers are more susceptible to stunting.

### Mother's Age

**Table 3.** Distribution of stunted mothers of toddlers based on age

No	Age (Years)	Number of Respondents			
		Treatment Group		Control Group	
		n	%	n	%
1	20-30	6	66,7	6	66,7
2	31-40	3	33,3	2	22,2
3	41-50	0	0	1	11,1
	Amount	9	100	9	100

Table 3 shows that the number of stunted mothers of toddlers aged 20-30 years was the highest, both in the treatment group and the control group, namely 6 mothers of toddlers (66.7%). A greater percentage of stunting occurs in toddlers who have mothers aged 20-30 years.

## Mother's Education

**Table 4.** Distribution of stunted mothers of toddlers based on aducation

No	Education	Number of Respondents			
		Treatment Group		Control Group	
		n	%	n	%
1	Junior high school	3	33,3	1	11,1
2	High school	6	66,7	7	77,8
3	Diploma I,II,III	0	0	1	11,1
	Amount	9	100	9	100

Table 4 shows that the majority of respondents had a high school/equivalent education in both the treatment and control groups, 66.7% and 77.8% respectively. The results from Table 4 show that most of the education levels of mothers of stunted toddlers are classified as secondary education, namely high school graduates.

## Mother's Work Type

**Table 5.** Distribution of stunted mothers of toddlers based on type of work

No	Work Type	Number of Respondents			
		Treatment Group		Control Group	
		n	%	n	%
1	Housewife	6	66,7	6	66,7
2	Self-Employed	3	33,3	2	22,2
3	Teacher	0	0	1	11,1
	Amount	9	100	9	100

Table 5 shows that the majority of stunted mothers of toddlers do not work or are housewives (IRT) in both the treatment and control groups, namely 66.7%. The results in Table 5 show that mothers of toddlers who do not work have a high chance of having children with short and very short nutritional status.

## Family Income

**Table 6.** Distribution of stunted mothers of toddlers based on family income

No	Family Income	Number of Respondents			
		Treatment Group		Control Group	
		N	%	n	%
1	≤ UMR	9	100	8	88,9
2	≥ UMR	0	0	1	11,1
	Amount	9	100	9	100

Table 6 shows that in the treatment group, all respondents, or 9 mothers of toddlers (100%) had a family income ≤ UMR Malang City, and in the control group 8 mothers of toddlers (88.9%) had a family income > UMR Malang City. The results from Table 6 show that children with low family income are at greater risk of experiencing stunting.

## Average Nutritional Knowledge of Mothers of Toddlers Before and After Nutrition Education in the Treatment Group and Control Group

**Table 7.** Average maternal nutritional knowledge before and after nutrition education

Knowledge	Treatment Group			Control Group		
	Average	SD	<i>p-value</i>	Average	SD	<i>p-value</i>
Before	62,2	11,7	0,000	62,2	11,7	0,002
After	92,8	6,1		79,4	6,8	

Table 7 shows that the mean score of mothers of stunting toddlers tends to increase after being given nutrition education, in the treatment group the average level of knowledge of mothers of stunting toddlers before being given nutrition education is 62.2 and the average knowledge value of mothers of stunting toddlers after being given nutrition education is 92.8 with the mean difference is 30.6. The mean knowledge score of mothers of stunting toddlers in the control group before being given nutrition education was 62.2 and the mean knowledge score of mothers of stunting toddlers after being given nutrition education was 79.4 with a mean difference of 17.2. The results of the Paired Sample T-Test statistical test in the treatment group obtained a significance value of p-value 0.000 ( $p < 0.05$ ) and in the control group, a significance value of p-value 0.002 ( $p < 0.05$ ) was obtained.

#### Differences in Average Changes in Knowledge of Mothers of Toddlers Before and After Nutrition Education between the Treatment Group and the Control Group

**Table 8.** Distribution of differences in average changes in knowledge of mothers of toddlers between the treatment group and the control group

Group	Knowledge		
	Average	SD	<i>p-value</i>
Treatment	30,6	11,8	0,028
Control	17,2	11,4	

In Table 8, it can be seen that the change in the average knowledge of mothers of stunting toddlers in the treatment group was 30.6, and the change in the level of knowledge of mothers of stunting toddlers tended to be higher when compared to the control group which only experienced a change in mean knowledge of 17.2 with a difference of 13.4. The results of the Independent Sample T-Test for the treatment group and control group showed a significance p-value of 0.028 ( $p < 0.05$ ).

#### Average Energy Consumption of Toddlers Before and After Nutrition Education in the Treatment Group and Control Group

**Table 9.** Average energy consumption of toddlers before and after nutrition education

Energy Consumption	Treatment Group			Control Group		
	Average	SD	<i>p-value</i>	Average	SD	<i>p-value</i>
Before	66,3	11,8	0,000	70,9	26,3	0,001
After	98,5	8,6		88,2	26,3	

In Table 9, it can be seen that the average energy consumption of stunted toddlers tends to increase after being given nutrition education, in the treatment group the average energy consumption of stunted toddlers was 66.3 and increased by 32.2 after being given nutrition education, namely to 98.5%. In the control group, the average energy consumption was 70.9 and increased by 17.3 after being given nutrition education, namely to 88.2. The results of the Paired Sample T-Test statistical test in the treatment group obtained a significance value of 0.000 ( $p < 0.05$ ) and the control group obtained a significance value of p-value 0.001 ( $p < 0.05$ ).

#### Differences in Average Changes in Energy Consumption of Toddlers Before and After Nutrition Education between the Treatment Group and the Control Group

**Table 10.** Distribution of differences in average changes in energy consumption of toddlers between the treatment group and the control group

Group	Energy Consumption		
	Average	SD	<i>p-value</i>
Treatment	32,1	10,9	0,011
Control	17,3	10,8	

Table 10 shows that the change in the level of energy consumption of stunted toddlers in the treatment group was 32.1, the rate of change in the average energy consumption tended to be higher when compared to the control group which only experienced a change in average energy consumption of 17.3 with a difference of 14.8. The results of the Independent Sample T-Test for the treatment group and control group showed a significance p-value of 0.011 ( $p < 0.05$ ).

## Average Protein Consumption of Toddlers Before and After Nutrition Education in the Treatment Group and Control Group

**Table 11.** Average protein consumption of toddlers before and after nutrition education

Protein Consumption	Treatment Group			Control Group		
	Average	SD	<i>p-value</i>	Average	SD	<i>p-value</i>
Before	70,3	13,1	0,001	76,6	23,5	0,005
After	96,2	11,0		83,1	21,9	

It can be seen in Table 11. The average protein consumption of stunted toddlers tends to increase after being given nutrition education, in the treatment group the average protein consumption was 70.3 and increased from 25.9 to 96.2. In the control group, the average protein consumption for stunted toddlers was 76.6 and increased from 6.5 to 83.1. The results of the Paired Sample T-Test statistical test in the treatment group showed a significance value of  $p$ -value 0.001 ( $p < 0.05$ ) and in the control group a significance value of  $p$ -value 0.005 ( $p < 0.05$ ).

## Differences in Average Changes in Protein Consumption of Toddlers Before and After Nutrition Education between the Treatment Group and the Control Group

**Table 12.** Distribution of differences in average changes in protein consumption of toddlers between the treatment group and the control group

Group	Protein Consumption		
	Average	SD	<i>p-value</i>
Treatment	25,8	5,1	0,002
Control	6,5	14,4	

Table 12 shows that the change in the average protein consumption of stunted toddlers in the treatment group was 25.8, the change in the average protein consumption tended to be higher when compared to the control group which only experienced a change in average protein consumption of 6.4 with a difference of 19.3. The results of the Independent T-Test for the treatment group and control group showed a significance  $p$ -value of 0.002 ( $p < 0.05$ ).

## DISCUSSION

### Toddler's Age

Toddlers aged 12-24 months are more susceptible to stunting. As they get older, toddlers in the 12-24 age group also experience an increase in energy and nutrient requirements, so they require more intake than toddlers in the 6-11-month age group. According to Kleinman & Coletta (2016), toddlers in the 12-24-month age group are more susceptible to stunting because the Basal Metabolic Rate (BMR) is higher in older toddlers than in younger toddlers [7].

### Toddler's Gender

Toddlers of the male gender are more susceptible to stunting. Research findings show that the factor that causes the high number of stunting in boys is because they tend to do activities that require more energy without getting adequate food intake [8].

Apart from that, another factor that causes the vulnerability of male toddlers to stunting is the view that the growth of boys can be hampered by psychological conditions. Psychological development involves understanding, and controlling expressions, and various types of emotions. In this developmental process, it is important to consider the child's dependence on their primary caregiver to meet their needs. Therefore, a warm, loving, and responsive environment plays an important role in children's psychological development [9].

### Mother's Age

A greater percentage of stunting occurs in toddlers who have mothers aged 20-30 years. This is in line with research conducted by Akombi et al (2017) in Nigeria who wrote that the mother's age at birth was related to stunting. Mothers who give birth at a young age tend to be associated with low birth weight, which is one of the causes of stunting in children [10].

Besides the mother's age being too young, it has a significant impact on the birth weight of the baby, the reproductive organs and physiological functions have not yet reached optimality. Apart from that, emotional and

psychological maturity has not yet been fully achieved, so pregnancies at this age are often faced with difficulties and often lead to complications. Meanwhile, the risk of pregnancy also increases in mothers who give birth at the age of less than 20 years or more than 35 years, which is often associated with conditions such as preeclampsia and restricted fetal growth. This shows that the mother's age during pregnancy can influence birth outcomes which can hinder the child's growth potential [11].

### **Mother's Education**

The mother's education level has a close relationship with stunting toddlers. Mothers with primary education have a 5.1 times risk of having stunted children [12]. Maternal education is the main factor influencing the incidence of stunting in children. Education level has a significant impact on health, including nutritional aspects. Someone with higher education tends to have broader knowledge about healthy lifestyles and how to maintain health, which is reflected in a good diet. They are also more likely to avoid smoking and drinking alcohol, which overall has a positive impact on their health [13].

### **Mother's Work Type**

Mothers of toddlers who do not work have a high chance of having children with short and very short nutritional status. Work influences a person's level of knowledge, where working individuals tend to have broader knowledge than those who do not work because they have more access to information. In addition, it is important to pay attention to maternal characteristics in the context of chronic stunting, which arises as a result of long-standing conditions such as poverty, inappropriate parenting patterns because parents are busy working, mothers' lack of knowledge about nutrition due to low levels of education, and frequently experience recurrent illnesses due to lack of adequate hygiene and sanitation (Susanto, D et al, 2015).

It was further explained in research by Mugianti, et al (2018) that mothers who do not work have a greater stunted child status than working mothers. The incidence of stunted children is more common in mothers who do not work, this could be because the economic status of the families of these mothers who do not work tends to be low [9].

### **Family Income**

Toddlers with low family incomes are at greater risk of experiencing stunting. As explained in research by Agustin, L & Rahmawati, D (2021), as many as 67.9% of families with stunted toddlers have incomes below the minimum wage. This shows that there is a relationship between family income and stunting [15].

Family economic status is a risk factor for stunting because it can influence their ability to meet children's nutritional needs, choose types of additional food, determine feeding times, and encourage a healthy lifestyle [16]. Someone with a good economic status tends to choose and buy foodstuffs that are rich in nutrition and of various types. On the other hand, low economic status is believed to be the main factor in the occurrence of stunting in children, characterized by a tendency to choose affordable sources of animal and vegetable protein according to their abilities. They also more often use vegetables obtained from agricultural land with a limited variety of plants for cooking, resulting in the daily menu being simple and less varied. As a result, a less varied diet can cause a lack of nutritional intake in toddlers [17].

### **Average Nutritional Knowledge of Mothers of Toddlers Before and After Nutrition Education in the Treatment Group and Control Group**

The results of the Paired Sample T-Test statistical test in the treatment group obtained a significant value of 0.000 ( $p < 0.05$ ) and in the control group, a significant value of 0.002 ( $p < 0.05$ ) was obtained. This proves that there is an influence of nutrition education on the knowledge of mothers of stunting toddlers before and after nutrition education in both the treatment group and the control group. The increase in nutritional knowledge as a result of providing nutritional education was due to the presentation of the material three times every three weeks for 60-90 minutes accompanied by counseling and motivation to apply the information received in daily life. Apart from that, the role of media in the educational process is also a major factor in increasing knowledge.

This is in line with the research results of Kaimarehe, Y (2024) which stated that there were differences in mothers' knowledge regarding giving MP-ASI to babies aged 6-12 months between before and after being given education using video media [18]. Besides that, research results from Azarta, et al (2024) show that mothers' knowledge about stunting increased significantly after being provided with education using video media [19].

### **Differences in Average Changes in Knowledge of Mothers of Toddlers Before and After Nutrition Education between the Treatment Group and the Control Group**

In Table 8, it can be seen that the change in the average knowledge of mothers of stunting toddlers in the treatment group was 30.6, and the change in the level of knowledge of mothers of stunting toddlers tended to be higher when compared to the control group which only experienced a change in mean knowledge of 17.2 with a difference of 13.4. The results of the Independent Sample T-Test for the treatment group and control group showed a significance p-value of 0.028 ( $p < 0.05$ ). This shows that there is a significant difference in changes in mean knowledge between the treatment group and the control group. Nutrition education in the treatment group was considered more effective compared to the control group. The difference in the average change in knowledge of stunting mothers of toddlers between the treatment group and the control group was caused by the fact that in the treatment group, mothers of toddlers were given education about MP-ASI in the form of counseling accompanied by the provision of media in the form of videos. Providing information about giving MP-ASI to mothers through video media is the optimal method because videos have the advantage of displaying images and sounding interesting so that mothers do not feel bored when watching them. This allows the message to be conveyed to be better received by the mother.

Melly & Magdalena's (2018) research shows that the results of education using video media are considered more influential than the lecture method, namely with a difference between before and after education of 27.1 [20]. Directly proportional to the research of Riani, et al. (2021) which also shows that there is a difference in the knowledge of mothers of toddlers after being given nutrition education between video media and the lecture method, where education using video media is considered to be more influential in increasing the knowledge of mothers of toddlers [21].

### **Average Energy Consumption of Toddlers Before and After Nutrition Education in the Treatment Group and Control Group**

The results of the Paired Sample T-Test statistical test in the treatment group obtained a significance value of 0.000 ( $p < 0.05$ ) and the control group obtained a significance value of 0.001 ( $p < 0.05$ ). This proves the influence of nutrition education on the average energy consumption of stunted toddlers before and after nutrition education, both in the treatment group and the control group. Changes in average energy consumption are directly proportional to the increase in knowledge of mothers of toddlers regarding MP-ASI. A good level of knowledge will influence mothers' practices in providing food to their children. This is in line with research conducted by Hestuningtyas (2013) which shows that a mother's high level of education significantly influences the mother's knowledge, attitudes, and practices in providing food to children. Good feeding practices can increase the energy consumption of stunted children [22].

### **Differences in Average Changes in Energy Consumption of Toddlers Before and After Nutrition Education between the Treatment Group and the Control Group**

Changes in the average energy consumption of stunted toddlers in the treatment group tended to be higher when compared to the control group. The difference in changes in the average energy consumption of stunted toddlers between the treatment group and the control group was caused by the fact that in the treatment group, mothers of toddlers were given education about MP-ASI in the form of counseling accompanied by media in the form of videos. Providing information about giving MP-ASI to mothers through video media is the optimal method because videos have the advantage of displaying images and sounding interesting so that mothers do not feel bored when watching them. This allows the message to be conveyed to be better received by the mother. Apart from increasing mothers' knowledge, it has also been applied to daily life in terms of providing food for toddlers, so this affects on increasing energy consumption. The increase in energy consumption in toddlers is accompanied by changes in eating frequency and the choice of food types becomes more diverse. Initially, the toddler's eating frequency was only according to the toddler's wishes. After being given education, the mother began to provide food according to MP-ASI principles regarding the frequency of toddlers' eating according to their age. Based on interviews conducted using the SQ-FFQ form, it was found that most toddlers tend to only consume 1 type of staple food, namely rice. However, after being given education, the variety of staple foods consumed by toddlers began to increase, such as rice, noodles, corn, and potatoes.

The results of the Independent Sample T-Test for the treatment group and control group showed a significance value of 0.011 ( $p < 0.05$ ). This proves that there is a significant difference in mean energy consumption between the treatment group and the control group. This is in line with research by Azarta, et al (2024) which shows that there is an influence of audio-visual video education on the knowledge and attitudes of mothers of toddlers about stunting [19]. Knowledge, attitudes, and actions are stages of behavior change or behavior formation. Individuals with good knowledge of nutrition tend to better understand the importance of



consuming a balanced diet, including the need for energy. They are better able to make food choices that meet daily nutritional needs, which will increase their toddler's energy consumption.

### **Average Protein Consumption of Toddlers Before and After Nutrition Education in the Treatment Group and Control Group**

The results of the Paired Sample T-Test statistical test in the treatment group obtained a significance value of 0.001 ( $p < 0.05$ ) and in the control group a significance value of 0.005 ( $p < 0.05$ ). This proves the influence of nutrition education on the average protein consumption of stunted toddlers before and after nutrition education. The change in average protein consumption between before and after being given nutrition education was caused by increased knowledge of mothers of toddlers which could influence the practice of providing food to their children. This is in line with the results of research by Pakhri, et al (2018) which stated that there were significant changes before and after nutrition education in protein intake [23].

### **Differences in Average Changes in Protein Consumption of Toddlers Before and After Nutrition Education between the Treatment Group and the Control Group**

Changes in the average protein consumption of stunted toddlers in the treatment group tended to be higher when compared to the control group. The increase in average protein consumption among toddlers is accompanied by changes in the choice of food types to become more diverse. Based on interviews conducted using the SQ-FFQ form, it was found that the majority of toddlers tend to only consume one to two types of animal side dishes in the past month, only one type of vegetable side dish is consumed, and there are even toddlers who do not consume vegetable side dishes at all in one month. last month. Before being given education, toddlers rarely consumed vegetables and fruit, some toddlers tended to only consume one to two types of vegetables and fruit in the last month. However, after being given education, the variety of animal side dishes increased to three to four types. Mothers of toddlers also start giving various types of vegetables and fruit to toddlers.

The results of the Independent Sample T-Test for the treatment group and control group showed a significance value of 0.002 ( $p < 0.05$ ). This proves that there is a significant difference in changes in mean protein consumption between the treatment group and the control group. Supported by research by Ningrum, et al (2024) which states that education based on animated video media is effective in increasing the knowledge of mothers of toddlers about food sources of animal protein to prevent stunting in children under five [24]. Individuals who have good knowledge about nutrition, especially food sources of animal protein, tend to better understand the importance of consuming a balanced diet, including the need for protein. They are better able to make food choices that meet daily nutritional needs, thereby increasing their toddler's protein consumption.

## **CONCLUSION**

This study concluded that there were differences in maternal knowledge, energy consumption, and toddler protein before and after nutrition education with video media and without video media ( $p < 0.05$ ). There are differences in maternal knowledge, energy consumption, and toddler protein between nutrition education using video media and nutrition education without video media. Based on the mean change figures in knowledge, energy consumption, and protein, the nutrition education group with video media had a higher change value so it was considered more effective compared to the nutrition education group without video media.

## **SUGGESTION**

The suggestions for this research are based on the obstacles that occurred during the research. Educational activities are hampered by the difficulty of mothers of toddlers in understanding the educational material presented regarding MP-ASI, especially the material on preparing menus using video media, so it needs to be supplemented with demonstration methods or cooking demonstrations.

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