THE EFFECTIVENESS OF HEALTH EDUCATION ON MOTHER'S KNOWLEDGE AND FOOD INTAKE AMONG STUNTING CHILDREAN IN SOUTH LAMPUNG, LAMPUNG

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ABSTRACT

Background: Short stature (stunting) is a condition of chronic nutritional problems that results in failure of growth in children under five who only appear after the age of 24 months. This condition is caused by a lack of nutritional intake for a long time and a lack of knowledge of the mother so that the golden period is not realized in children at the age of 0-24 months. Health education as a prevention effort has a positive impact on changes in maternal knowledge and children's food intake (energy and protein). This study aimed to analyze the effectiveness of health education on mother's knowledge and food intake among stunting childrean in South Lampung, Lampung.
Subjects and Method: This was an experimental study using a one group pretest-posttest design. This study was conducted in the working area of Sukadami community health center, South Lampung, from August to November 2019. The sample was 52 mothers who had stunted children aged 2-5 years and lived together. The dependent variables were maternal knowledge and food intake (energy and protein). The independent variable was maternal education. Maternal knowledge data was measured using a questionnaire and data on children's food intake was measured using a 24 hours food recall questionnaire. Data were analyzed using the Wilcoxon test.
Results: Health education was improving maternal knowledge (Mean= 15.6; $p<0.001$); increasing energy intake (Mean= 13.2; $p<0.001$), and increasing protein intake (Mean= 21.5; $p<0.001$), and they were statistically significant.
Conclusion: Health education is proven to have an effect on maternal knowledge and food intake (energy and protein) of stunting children in the working area of Sukadami community health center, South Lampung.

Keywords: health education, stunting, food intake, maternal knowledge

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BACKGROUND

Stunting is one of the challenges and problems facing global nutrition by people in the world. The Ambitious World Health Assembly targets a 40% reduction in stunting rates worldwide by 2025. The 2018 Global Nutritional Report reports that there are around 150.8 million (22.2%) stunted children under five, which is one of the factors hampering human development in the world. The World Health Organization (WHO) has defined five subregions for the prevalence of stunting, includeing Indonesia in the Southeast Asia region (36.4%) (WHO, 2014; United Nations, 2018; UNICEF, WHO, The World Bank, 2019).

Stunting is a health problem that is the focus of the government's health development program for 2015-2019 in addition to reducing maternal and infant mortality rates, controlling infectious diseases and controlling non-communicable diseases (Ministry of Health, 2015).

The results of basic health research (Riskesdas) in 2013 show that the prevalence of stunting in children is 37.3 % (18.1 % very short and 19.2 % stunted) or the

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equivalent of nearly 9 million children under five are stunted in Indonesia. The prevalence is then obtained from the main results of basic health research in 2018, namely 30.8 % (19.3 % of short children under five and 11.5 % of very short children) (Ministry of Health, 2013; 2018). Lampung Province is a contributor to a fairly large stunting rate with a prevalence of up to 42.64% which falls into the category of public health problems because the prevalence is more than 20% (WHO, 2010; Lampung Provincial Health Office, 2016). Sukadamai Health Center is located in Natar District, Lampung Regency South. This community health center work area covers 7 villages, the majority of which are farmers and laborers. In 2016, the prevalence of stunting in South Lampung reached 43%. The incidence of stunting in the working area of the Sukadamai Community Health Center reached 224 children with the highest villages being Bandarrejo Village, Sukadamai Village, Purwosari Village and Pancasila Village. (Lampung Provincial Health Office, 2016; South Lampung District Health Office, 2019).

Stunting is a chronic undernutrition experienced by a person since the womb and the early days of the child. This causes growth problems in children, namely the child's height is lower or shorter than the standard age. This can be caused by the low level of knowledge about health, the low consumption of food with balanced nutrition and the low level of the community's economy. (Prendergast and Humphrey, 2014). According to the Decree of the Minister of Health Number 1995/MENKES/SK/XII/2010 concerning Anthropometric Standards for Assessment of Children's Nutritional Status, the meaning of stunted (short) and severely stunted (very short) is nutritional status based on the body length index according to age, or height according to age. The measurement results obtained show the results are less than -2 standard deviation to -3 standard deviation (short) and less than -3 standard deviation (very short) (Ministry of Health, 2011).

Stunting can be caused by various factors from the mother's condition. or prospective mother, fetal period and infancy/toddler period or in line with the first 1000 days of life (1000 HPK). The 1000 HPK period is a golden period as well as a critical period for someone (windows of opportunity). The health and nutritional conditions of the mother before and during pregnancy, the posture of the mother, the close proximity of pregnancies, the mother who is still a teenager and the lack of nutrition during pregnancy affect fetal growth and the risk of stunting (Djauhari, 2017; Ministry of Health, 2018).

Intervention efforts for the 1000 of first day of live period include during pregnancy, when the baby is born, babies aged 6 months to 2 years and monitoring the growth of children under five at integrated health center as well as clean and healthy living habits (Ministry of Health, 2016). The role of the mother is very influential in the success of the intervention. The fulfillment of proper nutritional needs will run linearly with the quality of life and play an important role in a person's life because nutritional intake during pregnancy and breastfeeding will affect the state of the child's body, including growth and development of intellectual, psychological, memory, feelings and decision making of a child in the future (Husnah, 2017).

Early stunting has consequences for growth problems in children. Fulfillment of nutritional intake in toddlers is very important in supporting growth. Lack of nutrient intake, especially energy and

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protein intake, can cause growth failure, which can increase the risk of stunting. According to the results of the 2017 nutritional status monitoring survey (PSG), 43.2 % of children under five in Indonesia have an energy deficit and 28.5 % have a mild energy deficit and 31.9 % have a protein deficit and 14.5 % experience a mild protein deficit. Therefore, the knowledge of mothers about meeting nutritional needs will go straight to the incidence of stunting (Ministry of Health, 2018).

Diagnosis can be started from the age of 2 years to 5 years after the 1000 HPK period due to avoiding confusion from the growth factors that are happening due to the 1000 HPK period intervention. Stunting at this age is a window period that can cause organ defects and impaired child's function which can occur at the age of 5 years. This can lead to health problems and poor clinical manifestations. Therefore, community-based prevention and treatment efforts can reduce the incidence of stunting after the stunting window period (Aridiyah et al., 2015).

Health prevention and promotion efforts have been made to prevent and reduce the incidence of stunting. Prevention and health promotion is focused on overcoming the direct and indirect causes of stunting, one of which is using health education media (UNICEF, 2012). Health education is carried out in the scope of individuals, groups and the wider community using appropriate media facilities. Health education that is right on target will have an impact on comprehensive prevention (5 levels of prevention) and increase knowledge of health and increase the degree of public health (Fitriyani, 2011).

SUBJECTS AND METHOD

1. Study Design

This was a quasi-experimental study with a one group pretest-posttest study design. The study was conducted in the working area of the Sukadamai community health center, Natar District, South Lampung Regency, Lampung Province, Indonesia, from October to November 2019.

2. Population and Sample

The case population in this study were mothers who had stunted children aged two to five years. The sample was taken by using cluster sampling method. The inclusion criteria for this study sample were mothers who have stunting children aged 24-59 years, live permanently with their children, can read, and write and were willing to be respondents.

3. Study Variables

The independent variable in this study was health education, while the dependent variable in this study were the knowledge of the mother and the food intake (calories and protein).

4. Study Instruments

Health education in the form of providing health information about the nutrition of children under five was conveyed by the audiovisual method. Maternal knowledge data was obtained using a knowledge questionnaire that has been tested for validity and reliability. Food intake data were measured using a 24 hours food recall questionnaire, to assess energy and protein consumption in grams/day, then compared with the recommended nutritional adequacy rate (RDA) to obtain a nutriational adequacy level. Data collection was carried out by researchers with the help of 2 enumerators who had been given previous directions and training.

5. Data Analysis

The data were then analyzed using Wilcoxon test.

6. Research Ethic

This study was conducted after obtaining a research ethical clearance letter from the

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Ethical Committee of the Faculty of Medicine, University of Lampung with number 3138/UN26.18/PP.05.02.00/2019.

RESULTS

The results showed that there were 9 mothers aged 16-25 years (17.3%), 26-35 years as many as 34 people (65.4%) and 26-35 years as many as 9 people (17.3%). 13 mothers with primary education (25%), 29 junior high school students (55.8%), and 10 high school students (19.2%). The majority of mothers did not work with 39 respondents (75%) while 13 respondents (25%) worked as farmers, laborers and traders. Age of children of respondents with children aged 24-36 months was 34.6% or 18 respondents and respondents who had children aged 37-59 months were 65.4% or as many as 34 respondents. The nutritional status of children is obtained by measuring the nutritional status index based on height for age (TB/U), and shows the results of respondents with short nutritional status are 37 respondents (71.2%) and respondents with very short nutritional status are 15 respondents (18.5%).

Maternal knowledge distribution data before intervention with a median value of 65,625; the minimum value is 31.25 and the maximum value is 100, while the data on the distribution of maternal knowledge after the intervention has a median value of 81.25; The minimum value of 50 and the maximum value of 100. The results of the distribution of maternal knowledge showed an increase in the median value of maternal knowledge (15,625) and an increase in the minimum value of maternal knowledge (18.75), while the maximum value of maternal knowledge did not change.

Data on the distribution of children's energy intake before the intervention with a median value of 50,885; a minimum value of 24.52 and a maximum value of 150.85; while the data on the distribution of children's energy intake after the intervention with a median value of 64.11; the minimum value is 35 and the maximum value is 158.76. The results of the distribution of children's energy intake showed an increase in the median value of children's energy intake (13.22), an increase in the minimum value of children's energy intake (10.48), an increase in the maximum value of children's energy intake (7.91).

Data on the distribution of protein intake for children before the intervention with a median value of 86,115; a minimum score of 48 and a maximum score of 222.57; while the data on the distribution of protein intake of children after the intervention with a median value of 105.64; a minimum value of 66.86 and a maximum value of 226.62. The results of the distribution of children's protein intake showed an increase in the median value of children's protein intake (21,525), an increase in the minimum value of children's protein intake (18.86), an increase in the maximum value of children's protein intake (4.05).

Table 1. Characteristics of study subjects

Characteristics	n	%	Median	Min.	Max.
Maternal age					
<16 years	0	0			
16-25 years	9	17.3			
26-35 years	34	65.4			

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> 35 years	9	17.3			
Maternal education					
Not going to school	0	0			
Primary school	13	25			
Junior high school	29	55.8			
High School	10	19.2			
Diploma/Bachelor degree	0	0			
Mother occupation					
Work	13	25			
Not Working	39	75			
Age of Children					
24-36 years	18	34.6			
37-59 years	34	65.4			
Nutritional Status					
Short	37	71.2			
Very Short	15	28.8			
Mother's Knowledge					
Before			65.62	31.25	100
After			81.25	50	100
Children's Energy					
Intake			50.8	24.5	150.8
Before			64.1	35	158.7
After					
Children's protein					
intake			86.1	48	222.5
Before			105.6	66.8	226.6
After					

Based on the results of the data normality test, data on maternal knowledge and food intake (energy and protein) of children were not normally distributed so that the effect test was carried out using the Wilcoxon test. The results showed that there was an effect of health education on maternal knowledge (p = <0.001), with a median difference of 15.6; There were 41 respondents (78.85%) who experienced an increase in value after the intervention (posttest value> pretest value) and 9 respondents got the same score after the intervention (posttest value = pretest value) and 2 respondents (3.85%) who experienced a decrease in value after the intervention (value posttest <pretest value).

The results showed that there was an effect of health education on children's energy intake (p = <0.001), with a median difference of 13.3; and all respondents, namely 52 respondents (100%) experienced an increase in value after the intervention (posttest value> pretest value). The results showed that there was an effect of health education on children's protein intake (p = <0.001), with a median difference of 20.5 and all respondents, namely 52 respondents (100%), experienced an increase in value after the intervention (posttest value> pretest value).

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Table 2. Effect of Health Education Knowledge Against Maternal and intake Meal (Energy and Protein) Children

Variable	Median (Min-Max)	Mean	n	p
Knowledge Capital				
Before	65.62 (31.25-100)			<0.001
After	81.25 (50-100)			
Children Energy Intake				
Before	50.8 (24.5-150.8)	13.1	52	<0.001
After	64.1 (35-158.7)			
Children Protein Intake				
Before	86.1 (48-222.5)	20.5	52	<0.001
After	105.6 (66.8-226.6)			

DISCUSSION

The results showed that mothers in the age group 26 -35 years (middle adult category) is the age group with the largest number of samples, namely 35 respondents (65.4%). This shows that more respondents who have stunted children are in the middle adult age group. The mother's age has an impact on the provision of care to the child so that it will affect the child's health and nutritional status. Mother's age is related to the psychological condition of a mother in the pattern of caring for her child. The middle adult group is an age group with a high psychological impact due to the level of productivity, age maturity and thinking factors of a mother so that it can have an impact on the condition of a mother in caring for a child. Childcare includes feeding practices, food sanitation practices, environmental sanitation practices and child health care practices (Astari et al., 2005).

The results showed that maternal education at the junior high school level was the maternal education group with the largest number of respondents, namely 29 respondents (55.8%) and followed by respondents with elementary education, namely 13 respondents (25%). This shows that the number of respondents who have stunted children is more in the group with basic education, namely junior high school level. Maternal education is one of the factors that affect the knowledge of mothers in providing care for children, health care and disease status and child feeding. The lower the mother's education, the lower the output in the form of the child's nutritional status (Ni'mah and Nadhiroh, 2015).

The results showed that the respondents who did not work were the maternal occupation status group with the largest number of respondents, namely 39 respondents (75%). This shows that the number of respondents who have stunted children is more in the group of mothers who do not have a job. Maternal occupation status will have a role in giving attention in providing health services and preparing food intake. Mothers with employment status in the working group cannot give full attention to their children because of their busyness and work, which causes a lack of attention from mothers in preparing appropriate dishes for their children. Mothers with employment status in the non-working group can give full at-

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tention to their children, but other factors such as the influence of feeding, nutrition and childcare play a more major role as the main cause of nutritional problems in children (Anisa, 2012).

The results showed that the age group of children 37-59 months was the largest number of respondents, namely 34 respondents (65.4%). This study is supported by Sari and Octacia's study (2018) that the percentage of the age group of children with stunting 37-48 months and 49-59 months (short and very short) is 62.5% (Sari and Octacia, 2018). The results of this study are in accordance with the theory that stunting is a condition where the growth of toddlers fails due to lack of nutritional intake for a long time, which can be started when the baby is in the womb and in the early stages after the birth of a new baby can be seen after the baby is two years old (Ministry of Health Republic of Indonesia, 2010). The results of this study are in accordance with the 2018 Riskesdas data, which states that the highest percentage of stunting is in the 37-59 months age group, with details in the 36-47 months age group, there are 10.7% under five for very short nutritional status and 20.9% for under five for short nutritional status. In the 48–59-month age group, there are 7.7% of children under five for very short nutritional status and 19.2% of children under five for short nutritional status (Ministry of Health, 2018). This study is supported by study by Rahmad and Miko (2016) which states that the highest percentage of stunting is in the 37-59 months age group, namely 22 out of 38 toddlers (57.9%) (Rahmad and Miko, 2016).

The results showed that 18 children (18.5%) had severely stunted nutritional status and 37 children (71.2%) were stunted based on height indicators based on age (height/age). This study is supported by data from Riskesdas (2018) that the prevalence of children under five with very short nutritional status (11.5%) is lower than that of short nutrition (19.3%) (Ministry of Health, 2018).

The results showed that the mother's knowledge before the intervention had a median value of 65,625 in the category of sufficient knowledge, a minimum score of 31.25 in the category of poor knowledge and a maximum value of 100 in the good category. This shows that the distribution of maternal knowledge before the health education intervention is in the sufficient knowledge category with the lowest score in the lack of knowledge category. These results run linearly with the theory that maternal knowledge is one of the factors affecting nutritional status in children. The mother's level of knowledge will influence the behavior in regulating and the quality of the food given to the child, so that the mother's low level of knowledge can be one of the causes of nutritional problems including stunting. This study is in line with the results of Basuki's (2019) study with the results that the majority of mothers with stunted children are in the category of mothers with sufficient and insufficient knowledge, namely 64% of respondents (37.3% of respondents in the poor category and 26.7% of respondents in the sufficient category). Mothers with poor nutrition knowledge will have a significant impact on the nutritional status of their children which will be worse (Basuki, 2019., Jesmin, et al., 2011).

The results showed that the knowledge of the mother after the intervention obtained data with a median value of 81.25 with good categories; a minimum score of 50 in the poor category and a maximum value of 100 in the good category. This shows that the distribution of maternal knowledge after the health

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education intervention changed the majority in the good knowledge category with the lowest score in the poor knowledge category. The results of the distribution of maternal knowledge after the health education intervention showed an increase in the median value of maternal knowledge (15,625) and an increase in the minimum value of maternal knowledge (18.75), while the maximum value of maternal knowledge did not change. This shows an increase in the knowledge of mothers on child nutrition. Increasing maternal knowledge on child nutrition will significantly reduce the risk of stunting (Jesmin, et al, 2011).

In this study, it was found that the energy intake of children before the intervention resulted in a median value of 50,885 with a low category, a minimum value of 24.52 with a less category and a maximum value of 150.85 with an over category. This shows that the majority of the distribution of children's energy intake before the health education intervention is in the less category with the lowest score with the less category and the highest score with the more category. Lack of energy intake will result in obstruction of the process of height growth for a long time. Lack of energy intake in children results in reduced micronutrients in the child's growth process so that the lack of intake of these nutrients is a direct cause of stunting. Lack of energy intake can also lead to other malnutrition conditions that will be sustainable over a long period of time between stunting and other malnutrition such as wasting or malnutrition. The cause of the lack of energy in children occurs due to the low consumption of food intake containing energy or bioavailability of low energy intake in children (Mikhail, et al., 2013). The results of this study are in line with the study of Damayanti, Muniroh and Farapti (2016) which shows the distribution data of the results of the highest level of energy intake sufficiency is the level of inadequate energy intake (insufficient), namely 54.5% and children with adequate levels of energy intake are at risk of stunting 9.5 times. greater than children who have a sufficient level of adequate energy intake (Damayanti, Muniroh and Farapti, 2016).

In the data for measuring the energy intake of children after the intervention (posttest), the data on the distribution of energy intake for children after the intervention was obtained with a median value of 64,105 with a low category, a minimum value of 35 with a less category and a maximum value of 158.76 for more categories. The results of the distribution of children's energy intake showed an increase in the median value of children's energy intake (13.22), an increase in the minimum value of children's energy intake (10.48), an increase in the maximum value of children's energy intake (7.91). This shows that there is an increase in children's energy intake. Increasing the adequacy of children's energy intake will significantly reduce the risk of stunting (Oktarina and Sudiarti, 2013).

The results of the data on the distribution of protein intake for children before the intervention obtained a median value of 86,115 with a sufficient category, a minimum value of 48 with a low category and a maximum value of 222.57 with an over category. This shows that the majority of the distribution of children's protein intake before the health education intervention is in the sufficient category with the lowest score in the less category and the highest score in the over category. Protein is an essential nutrient that has a role in the growth of a child, processes in the body (the formation of hormones and enzymes) and reduces the body's resistance to disease. Growth in children will

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increase the total amount of protein intake in the body so that a child needs a greater amount of protein than other age groups (Almatsier, 2014). Therefore, insufficient protein intake can inhibit the growth rate and become a direct factor in the occurrence of malnutrition, including stunting (Adriani and Wirjatmadi, 2012). This is in line with the study of Damayanti, Muniroh and Farapti (2016) which shows that the distribution of the results of the highest level of protein intake is the level of inadequate energy intake (insufficient), namely 75% and children with an inadequate level of protein intake are at risk of stunting 10.6 times more. large compared to children who have an adequate level of adequate protein intake (Damayanti, Muniroh and Farapti, 2016).

The results showed that the protein intake of children after the intervention (posttest) obtained data on the distribution of protein intake of children after the intervention with a median value of 105.64 with a sufficient category, a minimum value of 66.86 with a poor category and a maximum value of 226.62 with a more category. The results of the distribution of children's protein intake showed an increase in the median value of children's protein intake (21,525), an increase in the minimum value of children's protein intake (18.86), an increase in the maximum value of children's protein intake (4.05). This indicates an increase in children's protein intake. Increasing the adequacy level of children's protein intake will significantly reduce the risk of stunting (Nungo, 2012).

The results showed that there were 41 respondents (78.85%) who experienced an increase in scores after the intervention (posttest value> pretest value) and 9 respondents got the same score after the intervention (posttest score = pretest value) and 2 respondents (3.85). %) who experienced a decrease in value after the intervention (posttest value <pretest value) with an increase in the median value of maternal knowledge of 15,625 and an increase in the minimum value of maternal knowledge by 18.75, while the maximum value of maternal knowledge did not change.

The effectiveness of health education interventions using the lecture method and audiovisual media proved a significant increase in respondents' knowledge before and after receiving health education. This is due to the transfer of knowledge that comes from a person's sensory stimulus. Health education also has a changing effect on the knowledge of mothers in carrying out their role as mothers in the health sector (Suputra, 2011). This study is supported by the study of Wahyurin, et al. (2017) with the results showing that the mean score of maternal knowledge on stunting children had a mean score of maternal knowledge at the pretest was 6.44 ± 1.65, while the score at the time of the posttest increased to 7.38 ± 1.76 and showed a significant difference between the mother's knowledge of stunting at the time before and after it was done. intervention (p = 0.009) with health education interventions (Wahyurin, et al., 2017).

Knowledge of balanced nutrition in children can be seen in the way mothers choose food ingredients and prepare food for their family needs. Therefore, good nutritional knowledge and the skills of mothers in choosing food ingredients greatly affect the family diet so that the mother's knowledge of nutrition is very necessary to determine the level of good food consumption in an effort to improve the nutritional status of children. Increased knowledge will have an impact on the behavior and attitudes of mothers in making decisions, providing health ser-

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vices and preparing and providing food intake so that it can reduce the risk of stunting (Nurmasyita, Widjanarko and Megawati, 2015).

The results showed that the differences in maternal knowledge scores after intervention using the Wilcoxon test showed an increase in knowledge of 52 respondents (100%) with an increase in the median value of children's energy intake by 13.22; an increase in the minimum value of children's energy intake by 10.48; and an increase in the maximum value of children's energy intake by 7.91.

Health education will affect the mother's knowledge in regulating the portion and proportion of food, the types and functions of food to serving the child. This change in knowledge strengthens the provision of energy intake which is one of the direct factors causing stunting. The effectiveness of health education interventions using lecture methods and audiovisual media on changes in children's energy intake is reinforced by the results of study by Hadisuyitno and Riyadi (2018) with the results that there are statistically significant differences in the energy consumption level of children under five before and after the health education intervention (p = 0.001) (Hadisuyitno and Riyadi, 2018).

Increasing children's energy intake will have an impact on meeting food intake, especially energy for growth and development as well as fulfillment as other functions so that it can reduce the risk of stunting. This is in line with Prabowo's study (2011) with the result that there is an effect of children's energy intake before and after health education with p = 0.001 (Prabowo, 2011).

The results showed that the difference in maternal knowledge scores after intervention using the Wilcoxon test was an increase in knowledge of 52 respondents (100%) with an increase in the median value of children's protein intake by 21,525; an increase in the minimum value of children's protein intake by 18.86; and an increase in the maximum value of children's protein intake by 4.05.

Health education interventions will have an impact on the mother's knowledge which will directly change the mother's behavior in providing good parenting and eating patterns for children. A good children's diet will result in an improvement or an increase in children's protein intake. The effectiveness of health education interventions using the lecture method and audiovisual intervention media on changes in children's protein intake was strengthened by the results of Duha's (2019) study with the results that there were statistically significant differences in the level of protein consumption of children under five before and after the health education intervention (p = 0.001) . In this study also showed that the average protein intake before the intervention was 36.62 mg and after the intervention was 51.16 mg so that it appears that the difference has an average difference of 14.52. This shows that providing health education interventions can increase protein intake in the sample (Duha, 2019).

Protein is a nutrient that the body needs for growth, building body structure (muscles, skin and bones) and as a substitute for old tissue. In a worse condition, protein deficiency for a long time can result in the cessation of the growth process (Andarini et al., 2013). Increasing children's protein intake will have an impact on fulfilling food intake, especially energy for growth and development as well as maintaining tissue and other protein functions so that it can reduce the risk of stunting. This is in line with the study of Thasim et al. (2013) with the results that there is a difference in the average energy intake of children before and after health

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education with p = 0.018 (Thasim et al., 2013).

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