DEVELOPMENT OF PRODUCTS BASED ON LOCAL FOOD INGREDIENTS AS AN EFFORT TO OVERCOME THE PROBLEM OF STUNTING IN TRIHARJOKAPANEWON PANDAK KALURAHAN BANTUL REGENCY DIY

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Abstracts

Introduction: *One of the causes of stunting is low nutritional intake during infancy and recurrent illnesses caused by an unhealthy environment. Therefore, mothers of toddlers are a potential strategic target to be empowered in efforts to overcome the problem of stunting. Efforts to overcome the problem of stunting are carried out by meeting nutritional needs from the time the fetus is in the womb and after birth. Mothers of toddlers are empowered to meet nutritional needs during infancy aged 6-24 months. Complementary breast milk food (MP-AS) containing calcium, zinc, selenium, iodine, Fe, protein, phosphorus can be obtained from local food ingredients.The aim of this research is to determine the impact of implementing MP-ASI based on local food ingredients as an effort to overcome the problem of stunting. The impact measured is the practice of families with babies aged 6-24 months in providing MP-ASI and intakeenergy, protein, calcium, Fe, Vitamin D, zinc, silenium, phosphorus, and iodine* ***Methodology:*** *This research method is a quasi-experimental designpre and post test with control. The subjects of this research were under-aged mothers, with the criteria being mothers who hadnchildren aged 0-2 years. The exclusion criteria were mothers who were over 35 years old and could not read and write.* ***Research findings:*** *This research was conducted in Triharjo Kapanewon Pandak Village, Bantul. This research was conducted from May to September 2023. The population was 100 families. A sample of 50 people was taken using a simple random sampling technique.Knowledge data was collected using a questionnaire instrument with a test method. Data analysis was carried out using the t test and Man Withney to determine the effectiveness of the differences between the two groups.* ***Conclusions:*** *The results of the study showed that there was a significant difference in the increase (delta) in the practice of providing MP-ASI and nutritional intake between treatment and control.*

Keywords *: MP-ASI, Local Food Ingredients, The role of The Family*

1. Introduction

Stunting is a major nutritional problem in Indonesia. Cases of stunted toddlers in Indonesia are 30.8% (Ministry of Health, 2018). In DIY, the prevalence of stunted babies born in 2018 was 28.7% (DIY Health Department, 2021). In the working area of Pandak II Community Health Center, Bantul Regency, stunting cases in 2019 were 6.19 (Bantul Health Office, 2019). The working area of Pandak II Community Health Center is a stunting locus. Lack of nutritional intake to meet

nutritional needs during infancy is one of the causes of stunting. The impact of stunting can cause irreversible disruption to a child's physical development, causing a decrease in cognitive and motor skills as well as a decrease in work performance (Astutik, 2018). Stunted children have an average Intelligence Quotient (IQ) score eleven points lower than the average IQ score of normal children (Picauly & Toy, 2013). For this reason, stunting is still a priority for nutrition programs in DIY, this is in line with the Action Plan of the Directorate of Community Nutrition, Directorate General of Public Health, Ministry of Health of the Republic of Indonesia as stated in the 2020-2024 National Medium Term Development Plan (RPJMN) document, which states 'increasing Community nutritional status is one of the development priorities, with the main target of reducing the prevalence of stunting and wasting to 14% and 7% respectively in 2024 (Ministry of Health of the Republic of Indonesia, 2020

The impact of impaired child growth and development due to malnutrition (stunting) if not addressed early on will continue into adulthood(Manggala, Kenwa, Kenwa, Sakti, & Sawitri, 2018). One of the causes of stunting is low nutritional intake and recurring illnesses based on an unhealthy environment(Rothman, 2007). If the fetus in the womb gets adequate nutrition, then when it is born its weight and body length will be normal(Aguayo, Nair, Badgaiyan, & Krishna, 2016). Providing exclusive breastfeeding and MP-ASI from the age of 6 months is an effective way to achieve normal body weight and length(Rochmah, 2017). Mothers are a strategic target to be empowered to meet nutritional needs at the age of 6–24 months, through providing MP-ASI. Based on the results of a preliminary survey in Kapanewon Pandak, Bantul Regency, 70% of mothers who have toddlers do not yet understand the knowledge about efforts to prevent stunting through providing MP-ASI during the toddler years by using local food ingredients that are rich in the nutrients animal protein, calcium, Fe. , Vitamin D, zinc, silenium, phosphorus and iodine which support height growth. Therefore, it is necessary to develop a stunting prevention program to meet the nutritional needs of 6-24 month olds as an effort to prevent stunting. One of these efforts can be implemented by empowering families in providing MP-ASI based on local food ingredients to

meet the nutritional needs of babies aged 6-24 months.

Mothers of toddlers are targets who can be empowered to meet nutritional needs, especially nutrients to prevent stunting in infancy aged 6-24 months by providing MPASI based on local food ingredients. MPASI using local food ingredients contains lots of micro minerals, protein and vitamins to prevent stunting which can be fulfilled from local food. Most of the people of Triharjo Kapanewon Pandak Village, Bantul Regency, DIY, make their living as farmers producing food crops. Food ingredients available in the community include: long beans, kale, mustard greens, tomatoes, gambas/ceme, carrots, peanuts, soybeans, cowpeas and corn. Other food ingredients that are widely available in Kalurakan Triharjo Kapanewon Pandak are eggs, chicken and fish. This food contains nutrients such as protein, calcium Fe, zinc, selenium, vitamin D and phosphorus which support height/length growth. The aim of this research is to analyze the influence of the implementation of giving MP-ASI based on local food ingredients on the practice of giving MP-ASI and intakeintakeenergy, protein, calcium, Fe, Vitamin D, zinc, silenium, phosphorus, and iodine.

2. Methods

This type of research is a quasi-experiment. The design of this research is pre and post test with control group. The subjects of this research were toddler mothers, with the criteria being mothers who had children aged 6 - 24 months, with babies with normal weight and body length, born even months. The exclusion criteria were mothers who could not read and write. This research was carried out in Triharjo Village (treatment group) and Caturharjo Village as the control group. The reason for conducting research at this location, based on the 2020 stunting measurement results report, the Bantul District Health Office, the prevalence of stunting is quite high at 6.19% (Bantul Health Office, 2020). The population of this study were all mothers from families with 100 families. The subjects as samples for this research were families with the criteria of having children under two years old. By calculating the sample size using the Vincent Gaspersz formula, the sample size was 50 people for each group. Sampling as subjects was determined by simple random sampling (Sugiyono, 2018). The division of subjects into the treatment and control groups was carried out by maching based on age, education level and occupation.

The treatment variable in this study was the implementation of providing MP-ASI based on local food ingredients which was carried out for 1.5 months. providing MP-ASI based on local food ingredients at the family level. The dependent variable is the practice of mothers with families aged 6-24 months in providing MP-ASI based on local food ingredients and food intake.energy, protein, calcium, vitamin A, vitamin B1, vitamin C, zinc, iodine and selenium. During treatmentmonitoring and coaching is carried out. Data analysis was carried out using the mean difference test of independent samples with the t-test statistical test technique, Man Wihney argued that the data was on an interval scale and the results of the Smirnov Kolmogorof test showed that the data was not normally distributed (Nursalam, 2020). This research has received ethical approval from the Poltekkes Kemenkes Yogyakarta with number No. e-KEPK/POLKESYO/0386/IV/2022.

3. Results

3.1 Characteristics of Research Subject

Tabel 13. Characteristics of Research Subjects

Variable	Treatment		Control	
	n	%	n	%
Mother's Age				
20-35 years	12	24	10	32
>35 years	38	76	40	68
Level of Education				
Elementary School	1	2	0	0
Junior High School	2	4	10	0
SMA/SMK	40	80	32	64
College	7	14	62	12
Job Status				
Not warking/IRT	35	70	26	52
Private	13	26	17	34
ASN	2	4	5	14

Table 13 shows the characteristics of research subjects based on mother's age, education level, and occupation. The characteristics of research subjects according to maternal age in the treatment group were found to be more mothers with an age range >35 years, namely 38 people (76%), while the age of mothers in the treatment group was also found to be more often found in mothers with an age range >35 years, namely 40 people (68%). The characteristics of the research subjects according to educational level in the treatment group were found to be more often mothers with a high school/vocational school education level, namely 40 people (80%), while the educational level status of mothers in the control group was also found to be more mothers with a high school/vocational school education level, namely 32 people. (64%). The characteristics of the research subjects according to

employment status in the treatment group were found to be more mothers as housewives, namely 35 people (70%), while the employment status of the control group was also found to be more mothers as housewives, namely 26 people (52%).

Variable	Knowledge				Total		p-value
	Not Enough		Good				
	n	%	n	%	n	%	
Mother's Age							
20-35 years	4	16	18	24	22	22	0.578
>35 years	21	84	57	76	78	78	
Level of Education							
Low	9	36	6	8	15	15	0.002
Tall	16	64	69	92	85	85	
Job Status							
Not working/IRT	8	32	53	70.7	61	61	0.001
Work	17	68	22	29.3	39	39	
Group							
Treatment	0	0	50	66.7	50	50	0.000
Control	25	100	25	33.3	50	50	

Table 14 shows the results of statistical analysis using the Chi Square test, which obtained a p-value of 0.578 (p-value > 0.05), so it can be concluded that there is no significant difference between the mother's age and the knowledge of the toddler's mother in providing MP-ASI to the toddler. Likewise, the results of statistical analysis using the Chi Square test obtained a p-value of 0.002 (p-value <0.05) so it can be concluded that there is a significant relationship between the level of maternal education and the knowledge of baduta mothers in providing MP-ASI for children aged 6 – 12 months.

The results of the analysis of the job status of the baduta's mother are known, showing that the results of statistical analysis using the Chi Square test obtained a p- value of 0.001 (p-value <0.05) so it can be concluded that there is a significant relationship between the mother's employment status and the knowledge of the baduta's mother in providing MP. -ASI for children aged 6 – 12 months.

The results of the analysis of the treatment group showed that the number of mothers with poor knowledge was all found in the group of mothers who were only given counseling (control), namely 25 people (100%), while mothers who had good knowledge were more often found in the mothers who were given MP-ASI practices, namely as many as 50 people (66.7%). The results of statistical analysis using the Chi-Square test obtained a p-value of 0.000 (p-value <0.05) so it can be concluded that there is a significant relationship between the treatment group and the knowledge of baduta mothers in providing MP-ASI for children aged 6 - 12 months.

3.2 The Effect of Treatment on The Practice Value of Giving MP-ASI

3.2.1 Differences in Practice Values of Giving MP-ASI at the Beginning of Treatment

Analysis of differences in practice scores for giving MP-ASI at the beginning of treatment (pre test) for mothers in the treatment group and the control group can be seen in table 15.

Group	n	Mean	Std. Dev	Difference	*p-value*
Treatment Group	50	66.50	11.48	5.07	0.323
Control Group	50	61.43	13.857		

Based on table 15, it shows that the average practice score before (pre-test) mothers regarding giving MP-ASI to meet the nutrition of toddlers as an effort to overcome the problem of stunting in the (treatment) group was 66.50, while the average counseling score during before (pre-test) mothers in the (control) group were given counseling about stunting prevention, amounting to 61.43. At the beginning of measuring the understanding of baduta mothers regarding giving MP-ASI, it showed that there was a difference in the average score between the control and treatment groups of 5.07. At the start of treatment, the control group had a higher average score compared to the treatment group. The results of statistical tests using Mann-Whitney showed a p-value of 0.323 (p-value > 0.05), which means there was no significant difference in intervention scores (counseling and MP-ASI practice) at the start of treatment (pre-test) between groups. treatment and control group.

3.2.2 Differences in Practice Values for Giving MP-ASI at the End of Treatment (Post-test)

The difference in practice scores at the end of the treatment (post test) of baduta mothers in the treatment group given empowerment/training in the use of local food ingredients and the group given counseling (control) can be seen in table 16 as follows: Table 16.

Group	n	Mean	Std. Dev	Difference	*p-value*
Treatment Group	50	95.16	4.153	10.66	0.000
Control Group	50	84.5	9.069		

Based on table 16, it shows that the average practice score for mothers in the (treatment) group, training on the use of local food ingredients in overcoming stunting, is 95.16, while the average knowledge score for mothers in the (control) group given counseling about stunting overcoming is 84.5. The difference in the increase in practice scores in the treatment and control groups was 10.66. The results of statistical tests using Mann-Whitney

show a p-value of 0.000 (p-value < 0.05). This means that there is a significant difference in practice scores at the end (Post Test) between the treatment group and the control group. At the end of the treatment, the practice value in the treatment group was greater than in the control group. Both the treatment group and the control group experienced an increase in practice scores. However, the increase in the practice scores of mothers in the treatment group was greater than that in the control group (95.16 > 84.5).

3.2.3 Improving the Practice of Giving MP-ASI

Measuring the increase in knowledge in both groups aims to determine changes in the practice value of giving MP-ASI to subjects in each group. The value of mothers' practice regarding giving MP-ASI as an effort to overcome stunting before and after in the group given the treatment of implementing MP-ASI products based on local food ingredients and counseling on giving MP-ASI (control group) was measured using a questionnaire. In detail, changes in maternal knowledge between groups can be seen in table 17.

Group	Pre-test			Post-test			p-value
	Mean	Min-Max	Std.Dev	Mean	Min-Max	Std. Dev	
Control	66.50	50-91.67	11.48	84.5	58-91.68	9.069	0.000
Treatment	61.43	25-91.67	13.857	95.16	91.67-100	4.163	0.000

Based on Table 17, it is known that there is a difference in the increase in the average value of the practice of providing MP-ASI in the treatment group and the control group. Statistical test results using the Wilcoxon Rank Test. (data is not normally distributed). The statistical test results in the control group showed a p-value of 0.000 (p-value < 0.05). This shows that there is an increase in the practice value of mothers before and after being given counseling about stunting prevention. The statistical test results in the treatment group showed a p-value of 0.000 (p-value < 0.05). This means that there is an increase in knowledge among toddler mothers before and after being given treatment regarding the practice of giving MP-ASI. Both groups (control and treatment) showed the same results, namely they had differences in increasing the practice of giving MP-ASI, however, based on the results of the analysis, it showed

differences in the value of increasing practice values in the treatment group (mothers who were given MP-ASI practice treatment were greater by 33.73, when compared to the control group which only experienced an increase of 18.9.

3.2.4 Improved practice of giving MP-ASI (delta)

The analysis of differences in the increase in knowledge (delta) of female orphans in the treatment group that was given training in the use of local food ingredients and the group that was given counseling (Control) aims to determine the effectiveness of training in the use of local food ingredients in increasing the practice value of female orphans in efforts to overcome stunting. A detailed analysis of the relationships between variables can be seen in table 18.

Group	n	Mean	Std. Dev	Difference	*p-value*
Treatment Group	50	33.72	14.681	15.72	0.000
Control Group	50	18	14.90		

The results of the analysis in Table 18 show that the average value of increasing the practice of giving MP-ASI by mothers in the treatment group was 33.72, while the average value of increasing the practice of mothers in the control group who were given stunting education was 18. There was a difference in the increase practice values in the treatment and control groups. The difference in the value of increasing practice values in the treatment group (badass mothers who were given training in the use of local food ingredients) and the control group was 15.72.

The increase in the practice of providing MP-ASI in the treatment group was greater when compared to the control group. Both the treatment group and the control group experienced an increase in practice scores. However, the increase in the practice of mothers in the treatment group was greater than in the control group (33.72 > 18). The results of statistical tests using the independent t-test showed a p-value of 0.000 (p-value < 0.05) which means there was difference in practice improvement (delta) between the treatment group and the control group. The value of practice in the treatment group, among mothers who were given training in the context of community empowerment in developing local food products, increased greater than in the control group.

3.3 Increased Nutritional Intake

3.3.1 Differences in intakeenergy, protein, calcium, vitamin A, vitamin B1, vitamin C, zinc iodine and seleniuminitial treatment (pre-test) for each group.

Group	n	Mean	Std Dev	Diff	*p-value*
Energy Intake					
Treatment Group	50	853.02	209.74	38.05	0.412
Control group	50	814/97	145.15		
Protein Intake					
Treatment group	50	14.54	3.13	2.71	0.000
Control group	50	17.25	2.96		
Calcium Intake					
Treatment group	50	243.18	133.54	30.82	0.379
Control group	50	256.18	109.29		
Vitamin A Intake					
Treatment group	50	5759.5	2682.7	736.2	0.213
Control group	50	5023.3	2141.5		
Vitamin B1 Intake					
Treatment group	50	0.681	2.125	1.913	0.426
Control group	50	0.361	0.212		
Vitamin C Intake					
Treatment group	50	33.84	4.81	10.42	0.197
Control group	50	23.42	5.45		
Zinc Mineral Intake					
Treatment group	50	4.87	1.01	0.21	0.754
Control group	50	4.66	0.90		
Iodine Mineral Intake					
Treatment group	50	121.36	23.83	1.38	0.764
Control group	50	119.98	20.39		
Selenium Mineral Intake					
Treatment group	50	18.35	3.18	0.44	0.195
Control group	50	18.79	1.77		

Based on table 19, it can be concluded that the average nutritional intake of toddlers (6 to 24 months) before being given treatment (pre-test) is the practice of providing MP-ASI based on local food ingredients, to meet the nutrition of toddlers as an effort to overcome the problem of stunting in treatment group and control group. The results of the analysis of the average energy intake in toddlers (6 to 24 months) before the intervention (treatment) was given was greater, namely 853.02 Kcal, and the average energy intake in toddlers (6 to 24 months) in the control group was amounting to 814.97 Kcal. The results of statistical tests using Mann-Whitney showed a p-value of 0.412 (p-value > 0.05), which means there was no significant difference in energy nutrient intake at the start of the intervention (pre-test) between the treatment group and the control group.

Analysis of the average intake of protein nutrients in toddlers (6 to 24 months) before the intervention was given was found to be smaller, namely 14.54 grams, when compared with the average protein intake in toddlers in the control group, namely 17.25 grams. The results of statistical tests using Mann-Whitney showed a p-value of 0.000 (p-value < 0.05), which means there was a significant difference in protein nutrient intake at the start of the intervention (pre-test) between the treatment group and the control group. Analysis of the average intake of calcium nutrients in toddlers before being given intervention (treatment) was found to be smaller, namely 248.18 mg, when compared with the average calcium intake in toddlers in the control group, namely 256.18 mg. The results

of statistical tests using Mann-Whitney showed a p-value of 0.379 (p-value > 0.05), which means there was no significant difference in calcium intake at the beginning of the intervention (pre-test) between the treatment group and the control group.

Analysis of the average intake of vitamin A nutrients in toddlers before being given intervention (treatment) was found to be greater, namely 5759.5 UI, when compared to the average intake of vitamin A in toddlers in the control group, namely 5023.3 UI. The results of statistical tests using Mann-Whitney showed a p-value of 0.213 (p-value > 0.05), which means there was no significant difference in intake of the nutrient vitamin A at the start of the intervention (pre-test) between the treatment group and the control group. Analysis of the average intake of vitamin B1 nutrients in toddlers before being given intervention (treatment) was found to be greater, namely 0.681 mg, when compared to the average intake of vitamin B1 in toddlers in the control group, namely 0.361 mg. The results of statistical tests using Mann-Whitney showed a p-value of 0.426 (p-value > 0.05), which means there was no significant difference in the intake of vitamin B1 nutrients at the start of the intervention (pre-test) between the treatment group and the control group.

Analysis of the average intake of the nutrient vitamin C in toddlers before being given intervention (treatment) was found to be greater, namely 29.17 mg, when compared to the average intake of vitamin C in toddlers in the control group, namely 24.85 mg. The results of statistical tests using Mann-Whitney showed a p-value of 0.197 (p-value > 0.05), which means there was no significant difference in intake of the nutrient vitamin C at the start of the intervention (pre-test) between the treatment group and the control group. Analysis of the average intake of zinc nutrients in toddlers before being given intervention (treatment) was found to be greater, namely 4.87 mg, when compared to the average intake of zinc in toddlers in the control group, namely 4.66 mg. The results of statistical tests using Mann-Whitney showed a p-value of 0.754 (pvalue > 0.05), which means there was no significant difference in zinc nutrient intake at the start of the intervention (pre-test) between the treatment group and the control group.

Analysis of the average intake of iodine nutrients in toddlers before being given intervention (treatment) was found to be greater, namely 121.36 mg,

when compared to the average intake of iodine in toddlers in the control group, namely 119.98 mg. The results of statistical tests using Mann-Whitney showed a p-value of 0.764 (p-value > 0.05), which means there was no significant difference in iodine intake at the beginning of the intervention (pre-test) between the treatment group and the control group. Analysis of the average intake of the nutrient selenium in toddlers before being given intervention (treatment) was found to be smaller, namely 18.35 mg, when compared to the average intake of selenium in toddlers in the control group, namely 18.79 mg. The results of statistical tests using Mann-Whitney showed a p-value of 0.195 (p-value > 0.05), which means there was no significant difference in the intake of the nutrient selenium at the start of the intervention (pre-test) between the treatment group and the control group.

3.3.2 Intake Differences Energy, Protein, Calcium, Vitamin A, Vitamin B1, Vitamin C, Zinc Iodine and SeleniumBeginning – End (post-test)

Group	n	Mean	Std Dev	Diff	*p-value*
Energy Intake					
Treatment Group	50	991.69	121.53	173.42	0.000
Control group	50	818.27	126.62		
Protein Intake					
Treatment group	50	18.62	1.88	2.67	0.000
Control group	50	15.95	2.34		
Calcium Intake					
Treatment group	50	239.05	56.47	37.09	0.003
Control group	50	201.96	53.01		
Vitamin A Intake					
Treatment group	50	4584	672.56	1038.6	0.000
Control group	50	3545.4	839.39		
Vitamin B1 Intake					
Treatment group	50	0.54	0.40	0.20	0.000
Control group	50	0.34	0.11		
Vitamin C Intake					
Treatment group	50	33.84	4.81	10.42	0.000
Control group	50	23.42	5.45		
Zinc Mineral Intake					
Treatment group	50	5.46	0.36	1.19	0.000
Control group	50	4.27	0.60		
Iodine Mineral Intake					
Treatment group	50	24.36	7.84	4.01	0.002
Control group	50	120.35	5.91		
Selenium Mineral Intake					
Treatment group	50	19.08	.51	0.67	0.016
Control group	50	18.411	1.53		

Based on table 20, it can be explained the average nutritional intake of babies aged 6-24 months after treatment (post-test) in both treatment groups and the control group. The average energy intake after treatment was greater (991.69 Kcal), compared to the control group of 818.27 Kcal. The results of statistical tests using Mann-Whitney showed a p-value of 0.000 (p-value < 0.05), which means there was a significant difference in energy intake

at the end of the intervention (post-test) between the treatment group and the control group. Protein intake at the end of treatment was greater, namely 18.62 grams, when compared to the average protein intake for toddlers in the control group, namely 15.95 grams. The results of statistical tests using MannWhitney showed a p-value of 0.000 (p-value < 0.05), which means there was a significant difference in protein nutrient intake at the end of the intervention (post-test) between the treatment group and the control group.

Calcium intake in toddlers after being given intervention (treatment) was greater (239.05 mg), when compared to the average calcium intake in the control group, which was 201.96 mg. The results of statistical tests using Mann-Whitney showed a p-value of 0.003 (p-value < 0.05), which means there was a significant difference in calcium intake at the end of the intervention (post-test) between the treatment group and the control group. Vitamin A nutrient intake at the end of treatment was greater, namely 4584 UI, compared to the average intake of vitamin A in the control group, namely 3545.3 UI. The results of statistical tests using Mann-Whitney showed a p-value of 0.000 (p-value < 0.05), which means there was a significant difference in the intake of the nutrient vitamin A at the end of the intervention (post-test) between the treatment group and the control group.

The nutritional intake of vitamin B1 in toddlers after being given the intervention (treatment) was found to be greater, namely 0.54 mg, compared to the average intake of vitamin B1 in toddlers in the control group, which was 0.34 mg. The results of statistical tests using Mann-Whitney showed a p-value of 0.000 (p-value < 0.05), which means there was a significant difference in the intake of vitamin B1 nutrients at the end of the intervention (post-test) between the treatment group and the control group. The nutritional intake of vitamin C in toddlers before the intervention (treatment) was given was greater, namely 33.84 mg, compared to the average intake of vitamin C in toddlers in the control group, namely 23.42 mg. The results of statistical tests using MannWhitney showed a p-value of 0.000 (p-value < 0.05), which means there was a significant difference in the intake of the nutrient vitamin C at the end of the intervention (post-test) between the treatment group and the control group. Analysis of the average intake of zinc nutrients in toddlers after being given intervention (treatment)

was found to be greater, namely 5.46 mg, when compared with

3.3.3 Increased Intake Energy, Protein, Calcium, Vitamin A, Vitamin B1, Vitamin C, Zinc Iodine and SeleniumBeginning and End

Group	Pre-test			Post-test			*p-value*
	Mean	Min-Max	Std Dev	Mean	Min-Max	Std Dev	
Energy							
Control	815.97	472.9-1009	145.15	818.27	469.9-1034.5	126.62	0.467
Treatment	853.02	444-1271.8	209.74	991.69	635.2-1192.1	121.53	0.000
Proteins							
Control	17.25	11.2-23.67	3.13	15.95	11.73-20.81	2.34	0.000
Treatment	14.54	8.1-24.8	2.96	18.62	15.23-23.29	1.88	0.000
Calcium							
Control	256.18	65.2-588.1	109.2	201.9	118.7-374.2	53.01	0,000
Treatment	243.14	51.6-796.9	133.54	239.05	125.4-376.9	56.47	0.647
Vitamin A							
Control	5023.3	52.7-9753	2141.5	3545.4	35.4-4962	839.3	0,000
Treatment	5794.5	480-13395	2682.7	4584	3186-6948	672.5	0.003
Vitamin B1							
Control	0.361	0.027-1.53	0.21	0.34	0.11-0.65	0.11	0.581
Treatment	0.681	0.026-15.33	2.12	0.54	0.42-0.65	0.04	0,000
Vitamin C							
Control	24.85	4.4-51.93	8.63	23.42	12.94-35.75	5.45	0.011
Treatment	29.17	0.3-95.9	16.98	33.84	26.2-53.9	4.81	0.001
Zinc							
Control	4.76	3.01-6.94	0.90	4.27	3.15-5.63	0.60	0,000
Treatment	4.81	3.01-6.94	1.01	5.46	4.39-6.16	0.36	0,000
Iodine							
Control	116.9	15.4-135.2	20.39	120.35	107.63-141.2	5.91	0.367
Treatment	115.6	15.4-145.6	23.83	124.36	109.2-154.9	7.84	0.013
Selenium							
Control	18.78	14.49-23.1	1.77	18.41	15.35-21.1	1.53	0.108
Treatment	17.79	5.13-23.1	3.18	19.08	15.35-22.71	1.51	0,000

Table 21 illustrates the differences in the average increase in intake of Energy, Protein, Calcium, Vitamin A, Vitamin B1, Vitamin C, Zinc Iodine after treatment. Based on the results of statistical tests on intake, there was no significant difference in increase between the two groups. Increase (delta) Intake of Protein, Calcium, Vitamin A, Vitamin B1, Vitamin C, Zinc Iodine showed a significant difference. The increase in intake of Protein, Calcium, Vitamin A, Vitamin B1, Vitamin C, Zinc Iodine in the treatment group was greater than in the control group.

4. Discussion

4.1 Increasing Mothers' Practices in Providing MP-ASI

The results of this research show that the group of mothers who were empowered to provide MP-ASI based on local food ingredients for 1.5 months

as an effort to overcome the problem of stunting experienced an increase. The target group mothers experienced an increase in the practice of providing MP-ASI as an effort to overcome the problem of stunting. These results are in accordance with research,Torlesse at all (2016). The implementation of MP-ASI empowerment based on local food ingredients has an impact on change and can make the community, especially families, aware of good behavior in overcoming the problem of stunting. Mothers are more skilled in practicing giving MP-ASI to babies aged 6-24 months (Torlesse, H, 2016). Mothers are skilled in the practice of selecting food ingredients for MP-ASI that contain lots of nutrients to support growth and prevent stunting. After being empowered and guided in providing MP-ASI based on local food ingredients for 1.5 months, the mothers were skilled in choosing local food ingredients that contain protein, calcium, iodine, selenium, zinc, Fe, phosphorus, vitamin D to prevent stunting.

The practice of providing MP-ASI in this research is expected to improve behavior in choosing local food ingredients for MP-ASI given at 6-24 months (Ministry of Health of the Republic of Indonesia, 2028).

Increasing the practical skills of mothers in providing MP-ASI based on local food ingredients is in accordance with Lawrence Green's "Precede-Proceed" theory which explains that behavior is influenced by three main factors, namely predisposing factors and enabling factors, and reinforcing factors. In this study, the factors that were given intervention/treatment were predisposing factors, namely knowledge about the practice of providing MP-ASI for Sitole porridge products based on local food ingredients to be applied to meet the nutritional needs of children aged 6 - 24 months, which is part of 1000 HPK as a prevention effort (Notoatmojo, 2014).

The first step in implementing MP-ASI based on community empowerment was education and training on the role of the family in overcoming the problem of stunting, with the aim of providing knowledge and skills to the community. This is in accordance with Notoatmodjo (2014), in general the level of knowledge consists of Knowing, defined as remembering material that has been studied previously, Understanding (Comprehension), defined as the ability to explain correctly about objects that are known and where they can be found. interpret correctly. Application is

defined as the ability to use material that has been studied in actual situations and conditions. Analysis is defined as the ability to express material or an object into components but still within the organizational structure and still related to each other. Synthesis, namely an ability to carry out. And evaluation, namely the ability to use knowledge to make an assessment of something based on certain criteria.

The level of knowledge consists of knowing and understanding. In line with research Latif, RVN, & Istiqomah, N. (2017), which says that remembering material that has been studied previously and understanding it can be interpreted as an ability that a person has to explain correctly about known objects and interpret the material correctly. According to Malik, quoted from Handayani's research, (2017) stated that human memory when providing an evaluation (post test) after providing health education information is 1 day (98%), 3-5 days (95%), 7 days (80%), 15 days (75%), 30 days (40%), 3 months (20%) and 6 months (5%). Meanwhile, according to Notoatmodjo (2012), the test time between the pre-test and post-test is neither too far nor too close, an interval of between 3 - 15 days is enough to meet the requirements.

Rogers (1974), said that before a person adopts a new behavior, a sequential process of knowledge occurs within the person, namely Awareness, Interest (feeling interested), evaluation (considering), trial (trying) and adoption (accepting). The dimensions of remembering and understanding can be obtained by memorizing more efficiently in certain circumstances. Such cognitive processes will be used in research, namely realizing, feeling interested, considering, conducting experiments and receiving the results.

4.2 Increased Nutritional Intake

The results of this research can be concluded that by implementing empowerment of local food ingredients (MP-ASI based on local food ingredients (Sitole porridge) as an effort to overcome the problem of stunting, it can increase mothers' skills/practices in meeting the nutritional needs of children aged 6-24 months, thus having an impact on increase the nutritional intake of children aged 6-24 months. Implementation of MP-ASI empowerment based on local food ingredients can improve mothers' skills/practices in meeting their

children's nutritional needs, mothers are more skilled in easily choosing food sources of nutrients to prevent stunting in family level. MP-ASI empowerment intervention based on local food ingredients was carried out for 1.5 months.

The results of this research are in accordance with Zikria's research, which explains that community empowerment, especially mothers, has an effect on improving the practices of housewives in meeting children's nutritional needs.(Zikria, 2018). Increasing the practical skills of mothers in providing MP-ASI based on local food ingredients has an impact on increasing awareness, abilities and skills of the community, especially mothers, in efforts to overcome the problem of stunting (Olsa, ED, Sulastri, D., & Anas, E. 2018). Increasing the skills/practice of these mothers has an impact on increasing nutritional intakethe nutrients protein, calcium, Fe, zinc, Vitamin A, Vitamin D, folic acid, phosphorus and iodine, nutrients needed to support children's growth, so as to prevent stunting.

Based on the research results, it can be concluded that there is an increased intake of several nutrients, namely protein, calcium, vitamin A, vitamin C and zinc. These nutrients are really needed to prevent stunting. According to researchKusumawati, E., Rahardjo, S., & Sari, HP (2013) lackIntake of nutrients, namely protein, calcium, vitamin A, vitamin C and zinc, is one of the risk factors for stunting.This shows the important role of the family in preventing stunting at the age of 6 - 24 months, which is part of the 1000 HPK period.

The results of this research emphasize the importance of the family's main role in providing food for toddlers aged 6-24 months as an effort to overcome the problem of stunting.(Kartinawati, KT, Darwata, I. W, and Yanti, NKR R, 2022). Mothers are fighting to fulfill MP-ASI dishes which contain lots of nutrients to support linear growth (body length) which means preventing stunting. Nutrients to support growth and prevent stunting are: calcium, iodine, zinc, selenium, protein and vitamins. Fulfillment of growth-supporting nutrients is obtained from mothers' actions in providing meals for toddlers. A nutritious meal served by the mother is the main action in efforts to prevent stunting,(Latif, RVN and Istiqomah, N. 2017).

There are several types of MP-ASI based on local food ingredients which were introduced and practiced at the

family level in this research. The local food ingredients used to prepare MP-ASI based on local food ingredients are: rice, eggs, catfish, banana, tofu, broccoli, spinach and long beans. One of the MP-ASIs introduced is rice porridge with the main ingredients being rice, eggs, catfish and spices. “Sitole” rice porridge. "Sitole" MP-ASI porridge is made from the main ingredients of rice and animal side dishes, egg and catfish. Apart from containing high levels of energy and fat, Sitole rice porridge contains the nutrients protein, calcium, Fe, zinc, Vitamin A, Vitamin D, folic acid, phosphorus and iodine, nutrients needed during growth and preventing stunting. Sitole MP-ASI porridge has its advantages; 1) babies like it, it's easy to make, the ingredients are easy to get and it's very cheap/affordable. Based on the results of discussions with mothers, babies really like this rice porridge. How to make and serve this porridge is very easy. Sitole MP-ASI porridge ingredients are available at stalls in the village.

Eggs have long been known by the public as a food that contains high protein. Eggs are also rich in vitamins, minerals and fat. Because of their nutritional content, eggs are very good as MP-ASI ingredients to meet nutritional needs that support children's growth, especially at 1000 HPK. Catfish is easy to get and cheap, and is a good food choice to meet your animal protein intake. Several types of fish, both sea fish and freshwater fish, are known to be rich in protein and omega-3 (Putri, AR, 2020).

The local MP-ASI food ingredient "Sitole" consists of eggs which are a source of animal protein containing the nutrients needed to prevent stunting. Eggs contain high protein and are good for consumption by pregnant and breastfeeding mothers as well as babies and toddlers to support growth. Apart from being high in protein, eggs and catfish also contain calcium, the most important mineral for preventing stunting (Margawati, Ani, Astuti, AM. 2018). The body needs calcium to form bones and nutrition, helps nerve function, muscle contraction, blood formation and plays a role in heart function. Calcium deficiency during growth causes growth disorders. Bones are less strong, bend easily and are brittle.

Eggs and catfish also contain Vitamin D, a nutrient needed for bone growth. It is widely known that vitamin D deficiency will affect linear growth from babies, toddlers, children to teenagers (Arisman, MB, 2010).Growth

disorders will result in stunting, which is a growth disorder that occurs due to chronic malnutrition and/or chronic infectious diseases (Chairunnisa, 2017). The function of vitamin D in growth is as a prohormone which plays an important role in calcium absorption in the intestine because if calcium absorption is disrupted then growth will also be disrupted (Putri, et al, 2018). Eggs and catfish also phosphorus is a nutrient for bone formation.

The form of efforts to overcome the stunting problem carried out by communitygroups at this level is in line with Notoatmodjo (2014) who explains that communityempowerment in the health sector is the main target of health promotion. Community empowerment in the field of nutrition and health is an effort or process to grow people's awareness, will and ability to recognize, overcome, maintain, protect and improve their own welfare. A community is said to be independent in the health sector if they are able to recognize health problems and the factors that influence health problems, especially in the environment where they live.

The role of the family in overcoming the problem of stunting as both an object and a subject, can be interpreted that the family as an object means that the family of children under five is the target that is directed and pursued so that they have the ability to overcome the problem of stunting independently.(Mardikanto T. 2010). The community is the subject because the community determines all actions and efforts to prevent cases of stunting. Officers from the sub-district level (puskesmas) act as facilitators who direct and monitor activities to overcome stunting problems in the community.

5. Conclusions

1. The implementation of MP-ASI products based on local food ingredients has been implemented in families with children aged 6–24 months as an effort to overcome the problem of stunting.
2. Increased practice valuemothers in providing MP-ASI based on local food ingredientsin the treatment group was greater when compared to the control group.
3. Increased nutritional intake of macro and micro nutrient intake shows that there are greater differences in the treatment groups.
4. Family empowerment in providing MP-ASI based on local food ingredients is effective in increasing mothers' skills in efforts to overcome the problem of stunting.

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