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The Effect of Nutritional Education with Leaflet Media on Increasing Maternal Knowledge and Intake of Protein, Zink, Calcium in Stunting Children Aged 6 – 23 Months

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ABSTRACT

Background: One of the nutritional problems in children is stunting where the index (PB/U) or (TB/U) is in the threshold (z-score) between (<-3 SD) very short TB/PB category and (-3 SD). SD)-(<-2 SD) short TB/PB category. The high prevalence is caused by many factors including mother's knowledge and child's food intake. Riskesdas (2019), The prevalence of very short and short toddlers is 30.8%. Meanwhile, in Demak Regency, theprevalence of stunting reached 26.1%, Guntur village with stunting toddlers was 15%.

Objective: To determine the effect of providing nutrition education with leaflet media on increasing maternal knowledge and intake of protein, zinc, calcium in stunting children.

Methods : This research is a research in the field of community nutrition. This type of research is quasi-experimental with one group pretest-posttest design. The number of samples is 18 stunting children and 18 respondents are mothers of stunted children. The data collected were mother's knowledge and food intake of stunting children by interview method and filling out questionnaires. Statistical analysis using Paired T test and Wilcoxon Signed Ranks Test.

Research Results: Mother's knowledge score increased by 6.77 (from 7.56 to 14.33). The average protein intake increased by 118.04 points, zinc intake increased by 71.85 points, calcium intake increased by 122.52 points. There are differences in maternal knowledge and intake of protein, zinc, and calcium in stunted children before and after being given nutrition education using leaflet media. (p= 0.007) and (p=0.008 , p=0.028, and p=0.008).

Conclusion: There is an effect of providing nutrition education with leaflet media on increasing mother's knowledge and intake of protein, zinc, calcium in stunting children

KEYWORDS: knowledge, intake of protein, zinc, calcium stunting children, leaflet.

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INTRODUCTION

One of the nutritional problems in Indonesia that has not been resolved is*stunting*. Children under five are a group that is vulnerable to nutritional problems.*Stunting* can cause long-term impacts, namely disruption of physical, mental, intellectual and cognitive development (1).

Stunting itself is a condition of failure to thrive in children under five which results from chronic malnutrition and repeated infections, which can cause children to be too short for their age.*Stunting* in toddlers it can be detrimental to physical development and affect the level of intelligence. Children who experience it*stunting* have a 9 times greater risk of having an IQ score below the average compared to children with normal nutritional status. Improvement efforts*stunting* It is best to focus on children aged < 2 years because this age range is a risk factor*stunting*. dangerous (2).

Stunting arises from chronic malnutrition. Category*stunting* based on the Body Length according to Age (PB/U) or Body Height according to Age (TB/U) index with a threshold (*With-score*) between <-3 SD in the very short nutritional status category and -3 SD to <-2 SD in the short nutritional status category.*Stunting* in toddlers it can be detrimental to physical development, and affect low levels of intelligence. Children who experience it*stunting* have a 9 times greater risk of having

an IQ score below the average compared to children with normal nutritional status.

One of the factors that has a direct influence on toddlers*stunting* is a low intake of nutrients, especially protein, zinc and calcium. This nutritional intake is obtained from breast milk (ASI) and complementary food-breast milk (MP-ASI). Based on similar research, there is a relationship between the mother's level of knowledge and the nutritional status of toddlers 1-5 years old.

Apart from the direct factor of food consumption, an indirect factor that influences the nutritional status of toddlers is mother's knowledge. A mother's lack of nutritional knowledge will affect the nutritional status of her toddler and it will be difficult for her to choose nutritious food for her child and family.

Nutrition education can play an important role in efforts to improve stunting. Nutrition education is able to identify nutritional problems that occur and find solutions to these problems. Nutrition education can increase knowledge and attitudes and can increase TB/U scores in children.

Media in health education can be interpreted as a tool for health promotion and facilitating communication and dissemination of information. The media used in counseling is leaflets. Leaflet media was chosen as an outreach medium because it is able to disseminate information in a relatively short time, so can improve knowledge, attitudes and behavior. Based on similar research, it is said that the role of media is needed in education. Leaflet considerations are considered practical and easier to carry and the content of the material is written in the leaflet.

Based on a preliminary survey regarding stunting prevalence figures obtained from the Demak District Health Service (2018), the results obtained with the highest value were in Guntur District (15%) and Guntur Village ranked with the highest number of stunted toddlers (14.98%).

Based on the problems above, the author is interested in conducting research on the effect of nutrition education using leaflet media on increasing maternal knowledge, as well as protein, zinc and calcium intake in stunted children aged 6-23 months in Guntur Village, Guntur District, Demak Regency.

METHOD

This research was conducted in Guntur Village, Guntur District, Demak Regency, working area of Guntur 1 Community Health Center. It was carried out in September 2021. The type of research used in this research was a design.*like an experiment*. This design was used to determine the effect of nutritional education on increasing maternal knowledge and children's protein, zinc and calcium intake*stunting* after being given intervention.

The design used in this study was a one group pretest-posttest experiment by looking at changes before and after being given counseling using leaflet media on measuring maternal knowledge, protein, zinc and calcium intake in stunted children aged 6-23 months.

The research population was all mothers who had children*stunting* aged 6-23 months in Guntur Village, Guntur sub-district, Demak Regency, as many as 20 children.

The samples used in the research used techniques*purposive sampling* namely a technique for determining samples by carrying out certain considerations deliberately. Of the total 20 children, 2 children were excluded because they did not meet the inclusion criteria. The child in the care of the grandmother and grandmother is less able to read and write and remember. A total of 18 children with 3 children in the very short category and 15 children in the short category who were in Guntur village, Guntur sub-district, Demak district.

The control group received no treatment at all, while the treatment group received education using leaflets.

Primary data collected included respondent identity data and samples by filling in questionnaires, mother's knowledge regarding nutrition which was measured using filling in a questionnaire containing knowledge questions about nutrition. Data on food intake of stunted children (Protein, Zinc, Calcium) obtained from filling in the sheet*Recall* 1x24 hours for 2 non-consecutive days. Secondary data taken was sample anthropometric data (body weight and height) obtained from the Guntur 1 Community Health Center.

Univariate analysis in this study was to describe mothers' knowledge scores, as well as protein, zinc and calcium intake in stunted children before and after intervention in the treatment and control groups. Univariate analysis is presented in the form of a proportion distribution table with categories of knowledge and intake. Meanwhile, numerical data is presented in the form of average values and standard deviation in the treatment group and control group.

Bivariate analysis is an analysis used on two groups of data, namely variables*independent*and*dependent*. Extension uses leaflet media as a variable*independent*, while the mother's level of knowledge and protein, zinc and calcium intake in stunted children are variables*dependent*. The results of the data normality test show that the data on the knowledge variable is not normally distributed in the treatment group and control group so that the test carried out*Wilcoxon Signed Ranks Test*. In the intake variable, the data in the control group was normally distributed so it was tested using*Paired Samples Statistic*. Meanwhile, in the treatment group, the data results were not normally distributed, so they were tested using*uji Wilcoxon Signed Ranks Test*.

Meanwhile, the test was used to determine the difference in the level of knowledge between the control group and the using behavior group*uji Mann Whitney Test,* Meanwhile, for intake in the control group, the test was used*Independent t-test* and*uji Mann Whitney Test* in the treatment group.

This research has been carried out*ethical clearence* from the Health Polytechnic Ethics Committee of the Ministry of Health, Semarang, to conduct research in Guntur Village, Guntur District, Demak Regency. This research was declared

ethically appropriate and indicators for each standard had been met. The Semarang Health Polytechnic health research ethics committee issued an ethical statement for this research with letter number No. 578/EA/KEPK/2021.

Descriptive Results of Respondent Characteristics

Table 1. Frequency Distribution of Respondents in VillagesThunder in 2021

Karakteristik Responden	n	%
Age		
< 20 years old	0	0
20-30 years old	14	77,7
31-40 years old	4	22,2
>40 years old	0	0
Education		
No school, elementary school	4	22,2
middle school, high school	14	77,7
College	0	0
Pekerjaan		
Housewives	16	88,8
Officers state Civil Private	0	0
Officer	1	5,55
Farmers/Fishermen/Other Laborers	0	0
	1	5,55
Family Income		
<500.000	6	33,3
500.000 – 1.000.000	3	16,6
>1.000.000 – 1.500.000	5	27,7
>1.500.000 – 2.000.000	2	11,1
>2.000.000	2	11,1
Amount news in the Family		
1	15	83,3
2	3	16,6
Total	**18**	**100**

It can be seen from table 1 above, of the total number of respondents of 18 respondents, the majority of respondents' age mothers were in the 20-30 year age category as many as 14 people (77.7%), while the rest were in the 31-40 year age category as many as 4 people (22.2%). The mother's age is an important factor in absorbing the information provided.

In the maternal education category, the highest respondent education was in the middle school and high school education category with 14 people (77.7%), while the remaining 4 people (22.2%) were in the elementary school (primary school) and no school education categories. Education influences the learning process, the higher a person's education, the easier it is for that person to receive information.

The highest proportion of respondents' occupation was not working (housewife) as many as 16 people (88.8%), while the highest proportion of family income was in the income category
< 500,000 as many as 6 people (33.3%). The highest number of toddlers in the family was in the 1 toddler category at 15 people (83.3%).

Descriptive Sample Characteristics

Table 2.Sample Frequency Distribution in VillagesThunder in 2021

Age (months)	Groupn	%
6-12	2	11,1
13-23	16	88,8
Total	18	100

From table 2 above, it can be seen that the largest number of sample ages were in the 13-23 month age category with a total of 16 children (88.8%), while the remaining 2 children (11.1%) were in the 6-12 month age category.

Univariate Analysis Results

1. **Knowledge during the Pre-test and Post-test in the Treatment Group and Control Group**

Based on the results of statistical tests in table 3 below, it shows that the proportion of mothers' knowledge in the treatment group before being given nutrition education was 9 people (100%). After being given Nutrition Education and provided*leaflet* The mother's knowledge category in this group increased to good knowledge by 9 people (100%).

In the control group, the number of mothers who had insufficient knowledge was 3 people (33.3%) and 6 people had sufficient knowledge (66.7%). After being given nutrition education without being given leaflets, the level of knowledge of mothers in the control group was 1 person (11.1%) with insufficient knowledge and 8 people (88.9%) with sufficient knowledge.

Mean knowledge score in the treatment group before being given nutrition education with*leaflet* was 7.56 and after being given intervention it was 14.33. The results of the intervention showed that after being given the nutrition education intervention, there was an increase in the knowledge score in the treatment group by 6.77 points.

The mean knowledge score in the control group before being given the intervention was 9.11 and after being given the intervention was 10.00. In this group, an increase in knowledge of 0.89 points was obtained from the results of the intervention carried out.

Table 3. Frequency Distribution of Current Knowledge Scores*Pre test* and*Post test* in the Treatment Group and Control Group

Knowledge Category	ent Group				nent Control(n = 9)			
	n	%	Mean±SD	Minimum Score + Maximum	n	%	Mean±SD	Minimum Score + Maximum
Before				5 + 9				4 + 12
Good (>80%)	0	0	7,56 ± 1,13		0	0	9,11 ± 2,31	
Enough (60 – 80%)	0	0			6	66,7		
Less (<60)	9	100			3	33,3		
After				12 + 15				6 + 12
Good (>80%)	9	100	14,33 ±		0	0	10,00 ± 2,39	
Enough (60 – 80%)	0	0	1,00		8	88,9		
Less (<60)	0	0			1	11,1		

1. Protein, Zinc, Calcium Intake of Stunting Children at the moment*Pre test* and*Post test* in the Treatment Group and Control Group

Based on the results of statistical tests in table 4 below, it shows that in the treatment group before the intervention was given, the average protein intake was 150.88%, zinc intake was 112.22% and calcium intake was 27.78%. After being given the intervention, the average protein intake in this group was 268.92%, zinc intake was 184.07% and calcium intake 150.30%. The increase in intake can be seen from the difference in average intake. In the protein intake category there was an increase amounted to 118.04 points, zinc intake increased by 71.85 points, and calcium intake increased by 122.52 points.

In the control group, the average intake before intervention was 120.55% for protein intake, 85.92% for zinc intake, and 25.02% for calcium intake. After being given the intervention, the control group's average intake was 199.00% for protein intake, 150.74% for zinc intake, and 61.96% for calcium intake. An increase in intake of 78.45 points for protein intake, an increase of 64.82 points for zinc intake, and an increase of 36.94 points for calcium intake.

Table 4. Frequency Distribution of Protein, Zinc, Calcium Intake of Stunting Children in Guntur Village, Guntur District, District. Demak 2021

Sample	N	Average score	Mean ± SD
	inimum (%)	ıximum (%)	
Treatment	9		
Proteins			
Before intervention	After19,33	232,67	150,88 ± 76,64
intervention	180,50	312,50	268,92 ± 38,20
Zinc			
Before intervention	After13,33	193,33	112,22 ± 55,30
intervention	110,0	250,0	184,07 ± 40,95
Calcium			
Before intervention	After4,22	85,71	27,78 ± 24,42
intervention	78,02	369,74	150,30 ± 103.38
Control	9		
Proteins			
Before intervention	After38	267,50	120,55 ± 69,45
intervention	119,50	274,0	199,00 ± 54,99
Zinc			
Before intervention	After33,33	156,67	85,92 ± 44,86
intervention	73,33	263,33	150,74 ± 63,80
Calsium			
Before intervention	After2,71	55,77	25,02 ±18,58
intervention	8,72	115,62	61,96 ± 32,09

DISCUSSION

1. The Effect of Nutrition Education with Leaflet Media on the Level of Knowledge of Mothers in Guntur Village, Demak Regency in the Treatment Group and Control Group

Table 6.Distribution of Differences in Maternal Nutrition Knowledge Scores before and after nutrition education in Guntur Village, Guntur District, Demak Regencyshe 2021

Knowledge Score	Rerata ± SD	P *value*
Ex. Treatment		**0,007**
Before intervention	7,56 ± 1,13	
After intervention	14,33 ± 1,00	
Ex. Control		**0,176**
Before intervention	9,11 ± 2,31	
After intervention	10,00 ± 2,39	

Wilcoxon Signed Ranks Test

Based on table 6 above, the results are obtained*uji Wilcoxon Signed Ranks Test* In the treatment group, the p value was 0.007 (p<0.05), so it can be concluded that there is an effect of providing nutrition education with media.*leaflet* towards increasing mothers' knowledge in Guntur Village, Demak District. Meanwhile, in the control group, the p value was 0.176 (p<0.05), so it can be concluded that providing nutrition education without media*leaflet* has no effect on mothers' knowledge in Guntur Village, Demak District.

2. Effect of Nutrition Education with Leaflet Media on Protein, Zinc, Calcium Intake in Stunted Children Aged 6-23 Months in the Treatment Group and Control Group in Guntur Village, Demak Regency

Based on table 7 below, the sample intake of the treatment group with*uji Wilcoxon Signed Ranks Test* The p value obtained for the protein intake category was 0.008 (p<0.05), which means there is an influence of providing nutrition education with media.*leaflet* on protein intake in stunted children in the treatment group in Guntur Village, Guntur District, Demak Regency. The p value is 0.028 (p<0.05) for zinc intake, so it means there is an influence of providing nutrition education with the media*leaflet* on zinc intake in stunted children in the treatment group in Guntur Village, Guntur District, Demak Regency. The result of p value 0.008 (p<0.05) was obtained from calcium intake, so it means that providing nutrition education with media*leaflet* effect on calcium intake in stunted children in the treatment group in Guntur Village, Guntur District, Demak Regency.

Based on table 8, control group sample intake with statistical tests*paired samples test* The result obtained was a p value of 0.005 (p<0.05) for protein intake, so it was interpreted that there was an effect of providing nutritional education without leaflets on protein intake in the control group in Guntur Village, Guntur District, Demak Regency. The results of statistical tests on zinc intake obtained a p value of 0.032 (p<0.05), so it means that there was an influence of providing nutritional education without leaflets on zinc intake in the control group in Guntur Village, Guntur District, Demak Regency. Then the p value of 0.004 (p<0.05) was obtained from the results of statistical tests for calcium intake, so it can be interpreted that there is an effect of providing nutritional education without leaflets on calcium intake in the control group.

Table 7.Distribution of Sample Intake in Treatment Groups in Guntur Village, Demak Regency in 2021

Treatment Group	Before	After	**P** value
	Mean ± SD	Mean ± SD	
Proteins	150,88± 76,64	268,92± 38,20	**0,008**
Zinc	112,22± 55,30	184,07± 40,95	**0,028**
Calcium	27,78± 24,42	150,30±103,38	**0,008**

Wilcoxon Signed Ranks Test

Table 8. Distribution of Sample Intake in the Control Group in Guntur Village, Demak Regency in 2021

Kelompok Kontrol	Sebelum Mean ± SD	Sesudah Mean ± SD	**P** *value*
Proteins	120,55 ± 69,45	199 ± 54,99	**0,005[a]**
Zinc	85,92 ± 44,86	150,74 ± 63,80	**0,032[a]**
Calcium	25,02 ± 18,58	61,96 ±32,09	**0,004[a]**

Paired Samples Statistic

CONCLUSION

here is an influence of providing nutrition education with the media*leaflet* on increasing maternal knowledge (p value 0.007/p<0.05) in the treatment group. Meanwhile, in the control group there was no effect of providing nutrition education with the media*leaflet* towards increasing maternal knowledge (p value 0.176/p<0.05).

There is an influence of nutrition education with the media*leaflet* on protein intake (p value 0.008/p<0.05), zinc (p value 0.028/p<0.05), and calcium (p value 0.008/p<0.05) in the treatment group. There was an effect of nutritional education using leaflet media on protein intake (p value 0.005/p<0.05), zinc intake (p value 0.032/p<0.05), and calcium intake (p value 0.004/p<0.05) .

SUGGESTION

For mothers to increase their knowledge independently by re-reading media leaflets or looking for material about stunted children through other media on the internet, or taking part in health education and applying a healthy and nutritionally balanced diet that has been obtained through health education that has been received during education. or in other forums.

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