The Proceeding of International Nutrition and Health Symposium
ISSN 2598-8557

November, 2017

EFFECT OF NUTRITION COUNSELLING AND COMPLEMENTARY FEEDING TOWARD A PICKY EATERS PRESCHOOL CHILDREN (AGED 3-5 YEARS) IN PUUWATU DISTRICT AREA KOTA KENDARI

Rasmaniar*, Andi Erwin, Sri Yunancy
*Corresponding author. Email: rasmaniar.gizi@yahoo.co.id

ABSTRACT

Background: Riskesdas data (2013) show that the prevalence of malnourished under five children is remained high (19,6%). Study in Jakarta also found that the prevalence of pre-school children who experienced by eating difficulty is 33,6% and among 44,5% are suffering from mild to moderate malnutrition. The purpose of this study is aimed to determine the effect of nutrition counselling and complementary feeding toward a picky eater pre-school children in the Puuwatu district area.

Method: This study was a quasi-experimental design with non randomized pretest-posttest group design. The population was all of preschoolers enrolled in kindergarten in the Puuwatu district. The sample of this study was 100 preschool children aged 3-5 years who have difficulty in eating (picky eater) in the kindergarten of Puuwatu district (divided into 2 groups 50 samples as the treatment group, and 50 samples as a control group). The data were collected by interview using structured questionnaires through the mother or caregiver along with physical examination of the child's health. Nutrient intake was obtained by filling out a 24-hour recall. Analysis was done through independent t - test.

Result: Picky eaters preschool children who are categorized inadequate of energy intake is 79%, while 22% categorized inadequate in protein intake. The result of study in nutrition counselling treatment groups with control groups shows there is a difference in energy intake between baseline (p=0.025) and endline of observation (p=0,006), likewise difference in protein intake between baseline (p=0.000) and endline of observation (p=0,000). In the complementary feeding treatment groups show the same pattern with nutrition counselling treatment groups there is a difference in energy intake between baseline (p=0.025) and endline of observation (p=0,003), also difference in protein intake between baseline (p=0.000) and endline of observation (p=0,000).

Conclusions: There is a difference in energy intake between baseline and endline of observation likewise difference in protein intake between baseline and endline of observation in nutrition counselling treatment groups compare with control groups. In the complementary feeding treatment groups show the same pattern with nutrition counselling treatment groups there is a difference in energy intake between baseline and endline of observation, also difference in protein intake between baseline and endline of observation.

Recommendation: Socialization of appropriate basic feeding rules is needed to be implemented by mothers or caregivers.

Keywords: *Nutritional counselling, complementary feeding, picky eater, nutrition.*

INTRODUCTION

Children aged 3-5 years is preschool children who are experiencing growth processes and classified as active consumers. This age range classified as golden age of a child growth and development especially related language, cognitive and emotional functions. To support the growth and development, nutritional intake takes play an important role.[1] Children with poor feeding practice from their mothers tend to have difficulty in eating and resulting reduced levels of consumption both of energy and protein. If this situation lasts long it will affect its nutritional status.[2]

Based on Riskesdas 2013 prevalence of underweight under five children is 19.6%, including preschool children (aged 3-5 years).[3] Whereas in Puskesmas Puuwatu the prevalence of underweight under five children is 13.3%.[4] Research conducted in Jakarta shows the prevalence of feeding difficulties in preschool children aged 4-6 years is 33.6% while 44.5% suffer from mild to moderate malnutrition, and 79.2% has lasted more than 3 months.[5]

Difficulty eating (picky eater) is the behaviour of children who experience eating disorders in the form of rejection of food, do not want to eat, length of time to eat more than 30 minutes, and only want to eat certain foods.[6] Difficulty eating in children is often associated with failure to grow. Failure to grow in general can be caused either by organic or non organic factors. Including organic factors such as abnormalities of anatomical structures, digestive system, metabolic abnormalities, mechanical obstruction, cranial nerve damage, food allergies, and dysphagia. While non-organic factors include psychosocial factors, inability of parents to provide adequate food intake, as well as ignorance / misinformation about how to feed the child.[7]

Child with picky eaters can experienced lacking of macro nutrients as well as micronutrients, which can ultimately interfere with physical growth that is characterized by less weight and height or difficulty to increase weight and also cognitive growth disorders.[5]

Harinda's research in Semarang shows that 96.8% of children have difficulty eating categorized as inappropriate feeding practice type, nutritional status of picky eaters children consist normal as much as 90.3% and 5.4% as underweight.

Improvement in coping the problem of difficulty eating is providing such as by nutrition counselling for parents/caregivers or by complementary feeding to children with eating difficulties (picky eater). Nutrition counselling is one of the effective communication process to help mothers in overcoming children feeding practice problem (picky eater). Nutrition counselling is provided with nine Guidelines for Feeding the Children or known as Basic Feeding Rules.[5,9] Complementary feeding (PMT) is an intervention to restore or increase the nutritional intake of picky eater in the form of additional food outside of food consumed by children in their family environment.

Based on some problems related to feeding difficulties (picky eater) in preschoolers, the researcher tries to raise the problem of whether nutritional counselling and complementary feeding effect the preschool (aged 3-5 years) nutritional intake who have difficulty in eating (picky eater) at Puuwatu district of Kendari in 2015?

METHODS

The type of research in this study is experimental design (quasy experiment). The research design model is non-randomized experimental design or also called non-randomized pretest-posttest control group design.

Place and time research

This research was conducted from June to October 2015. The place of research located in some Kindergarten of Puuwatu sub-district Kendari, Southeast Sulawesi Province.

Population and sample

The population in this study was all preschool-aged children enrolled as Kindergarten students in Puuwatu sub-district Kendari. Samples in this study were preschool children who had difficulty in eating (picky eater), which amounted to 100 samples (50 samples of treatment group and 50 control group samples). The treatment group was a picky eater child whose mother was given counseling and supplemental feeding for child, while the control group was a picky-eater whose mother was not given counseling and was not given any additional food to the child. Inclusion criteria: Preschoolers who had nutritional status were wasting and underweight (based on indicator BB / TB, BB / U), have difficulty in eating (picky eater) with type inapropriate in feeding practice (parental miss perception) and parents/caregiver willing to participate (sign the inform consent) along with follow counseling.

Exclusion Criteria: Infantile Anorexia, Sensory Food Aversions, Posttraumatic Feeding Disorder, Feeding Disorder Associated with a concurrent medical condition.

Sample selection

1. The selection of the sample area is done by purposive sampling by selecting one sub-district which is estimated to have high nutritional problem especially wasting and underweight in preschool child (aged 3-5 years) in Puuwatu sub-district Kendari.
2. Samples of preschool children who experience picky eater are selected after screening by filling out a questionnaire and examining the preschooler to determine the type of picky eater.
3. Respondents in this study are mothers/caregiver who have children experienced picky eaters type inappopriate feeding practice and parental miss perception.

Data collection method

1. The general identity of the sample, the type of picky eater experienced is obtained by conducting direct interviews to the mother/caregiver based on the structured questionnaire.
2. Mother's nutritional knowledge and picky eater child eating habits; data collected through interviews using structured questionnaires.
3. Nutrition intake is measured by doing recall consumption (food recall) 24 hours for 2 consecutive days.

Research instruments:

1. The measuring tool used to determine the type of picky eater by using questionnaires and physical examination of the child.
2. Child nutritional intake recorded by food recall 24 hours form for 2 consecutive days, and done before, during and after the intervention.
3. Materials used in counselling are flipcharts, leaflets on feeding guidelines for preschoolers and materials on how to deal with Picky Eater in preschool children.
4. Provision of additional foods in the form of carrot pudding and balls-chicken ball sweet sour sauce.

Data processing and analysis plan

Data processing is done by computerized system. Data analysis was performed to test the variables studied by using independent t-test.

Data presentation

Presentation of data in the form of graphs, tables and accompanied by explanation of research results.

RESULTS

Table 1. General Characteristic of sample

Variables	N	%
Children		
Sex	51	51,0
Boys	49	49,0
Girls		
Age (months)		
12 – 36	1	1,00
37 – 72	99	99,0
Energy intake		
Inadequate	79	79,0
Adequate	21	21,0
Protein intake		
Inadequate	22	79,0
Adequate	78	21,0
Age get food		
0 – 6	86	86,0
7 – 12	14	14,0
Mother		
Knowledge		
Inadequate	83	83,0
Adequate	17	17,0
Attitude		
Inadequate	99	99,0
Adequate	1	1,00

Bivariate analysis

1. **Differences in nutritional intake of preschool children with difficulty eating in the baseline and endline of observation in the treatment group (mother was given nutritional counseling).**
   a. **Average energy and protein intake in the baseline and endline of observation**

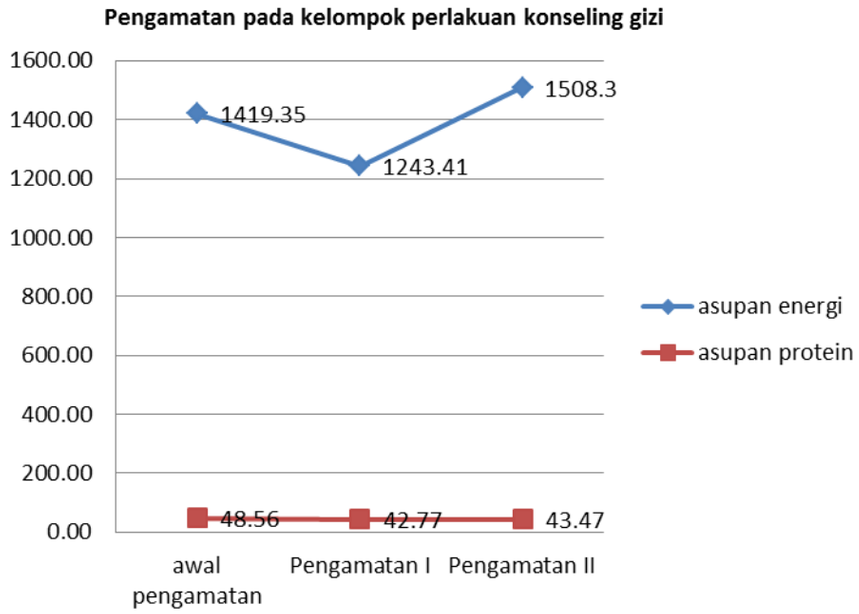

Figure 1. Graph of average energy and protein intake at baseline to end of observation for treatment group with nutritional counseling.

The average energy intake in the nutrition counseling group experienced an increase at the end of the observation. At the beginning of the observation energy intake of 1419.35 kcal, the first observation decreased to 1243,41 kcal and then increased to 1508.30 kcal at the end of the observation. In contrast to energy intake, protein intake tends to decrease. At the beginning of the protein intake of 48.56 grams, the first observation decreased to 42.77 gr, then 43.47 gr at the end of the observation.

   b. **Differences in energy and protein intake at baseline and endline of observation in nutrition counseling group**

Table 2. Differences in intake in the group of counseling interventions

Variables	Baseline	Endline	Sign (p)
Energy intake	1419	1508	0.392
Protein intake	48,5	43.4	0.081

2. **Differences in nutritional intake of preschool children with feeding difficulties at baseline and end of observation in the control group (mother/caregiver not given nutritional counseling).**

   a. **Average initial and final energy and protein intake in the control group for nutritional counseling treatment**

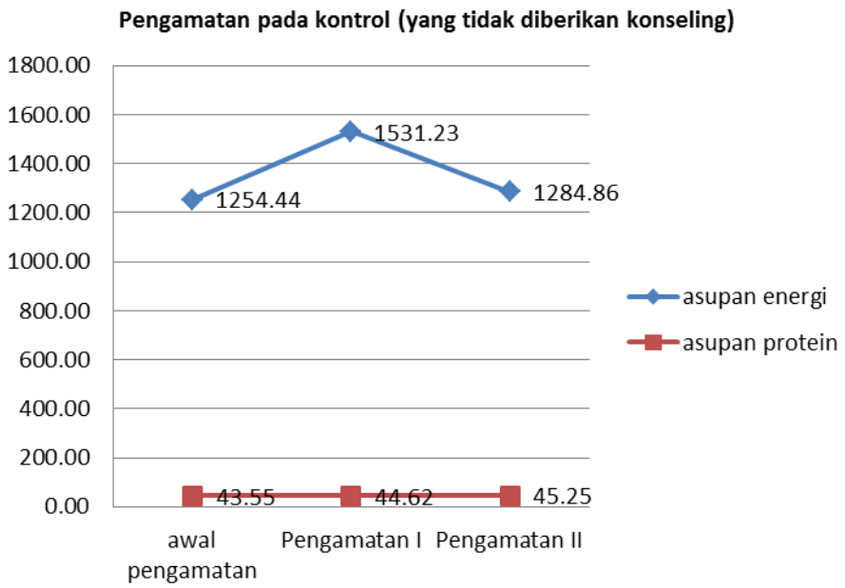

Figure 2. Graph of average energy and protein intake at baseline to end of observation for the control group (not given nutritional counseling).

   b. **Differences in energy and protein intake at baseline and end of observation in the control group (not given nutritional counseling)**

Table 3. Differences in intake control group counseling

Variables	Baseline	Endline	Sign (p)
Energy intake	1254	1284	0.000
Protein intake	43,5	45,2	0.000

3. **Differences in changes in nutrient intake between treatment groups and control groups at the beginning and end of the school**

Table 4 Differences in changes nutritional intake of treatment and control groups on nutrition counseling interventions at the baseline and end of observation

Variables	Baseline		Sign (p)	Endline		Sign (p)
	Treatment	Control		Treatment	Control	
Energy intake	1419,35	1254,44	0,025	1508,3	1284,86	0,006
Protein intake	48,56	43,55	0.000	43,47	45,25	0.000

At baseline, there is a difference between in the intervention group and the control group on energy intake (p = 0.025) and protein intake (p = 0.000). While at the end of the observation there is also a difference between the intervention group and the control group on the energy intake (p = 0.006) and protein intake (0.000). The result based on independent t test analysis shows the interpretation H0 rejected because the probability value <0.05.

4. **Differences in nutritional intake of preschool children with the treatment of complementary feeding at the baseline and end of the observation.**

   a. **Average nutritional intake of preschool children with complementary feeding treatment at baseline and end of observation**

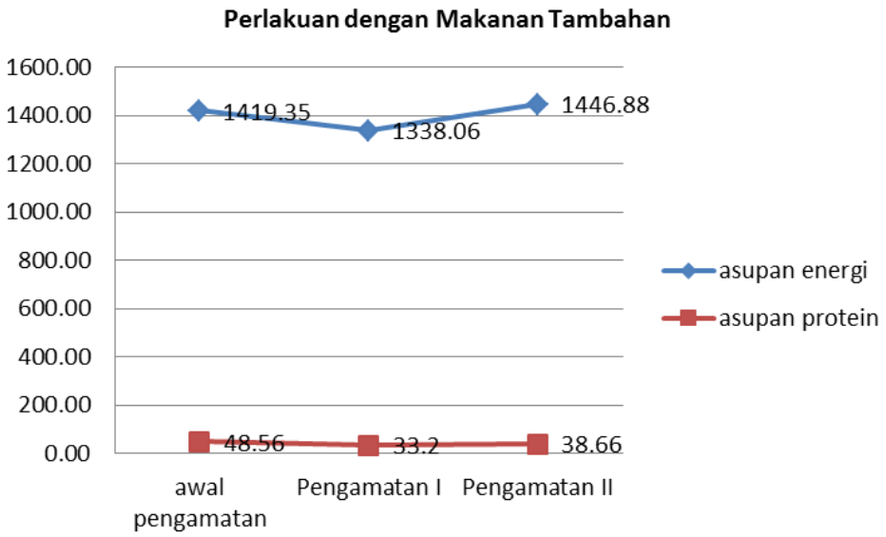

Figure 3. Graph of average energy and protein intake at baseline to end of observation for treatment group with supplementary feeding.

The average energy intake in the complementary feeding treatment group experienced a slight increase at the end of the observation. At the baseline of the observation energy intake is 1419.35 kcal, at the first observation decreased to 1338.06, then increased to 1446.88 kcal at the end of the observation. In contrast to energy intake, protein intake decreased. At the beginning of observation protein intake from 48.56 grams decreased to 33.2%, then increased again to 38.66 grams at the end of the observation.

b. **Differences in energy and protein intake at baseline and end of observation in the control group (not given complementary feeding)**

Table 5 Differences in intake in the group of supplementary feeding treatment at the beginning and end of the observation.

Variables	Baseline	Endline	Sign (p)
Energy intake	1419	1446	0.75
Protein intake	48,5	38,6	0.21

Based on table 5, the energy intake of preschool children at the beginning and end of observation in the treatment group did not have a significant difference (p = 0.752). While protein intake of preschool children at the beginning and end of observation in treatment group also did not have significant difference (p = 0.215). The result of the analysis using paired sample t test shows interpretation H0 accepted, with probability value > 0.05.

5. **Differences in nutritional intake of preschool children who have difficulty in eating who are not given complementary feeding (control group) at the baseline and end of observation.**

   a. **Average nutritional intake of preschool children who were not given complementary feeding (control group) at the baseline and end of the observation.**

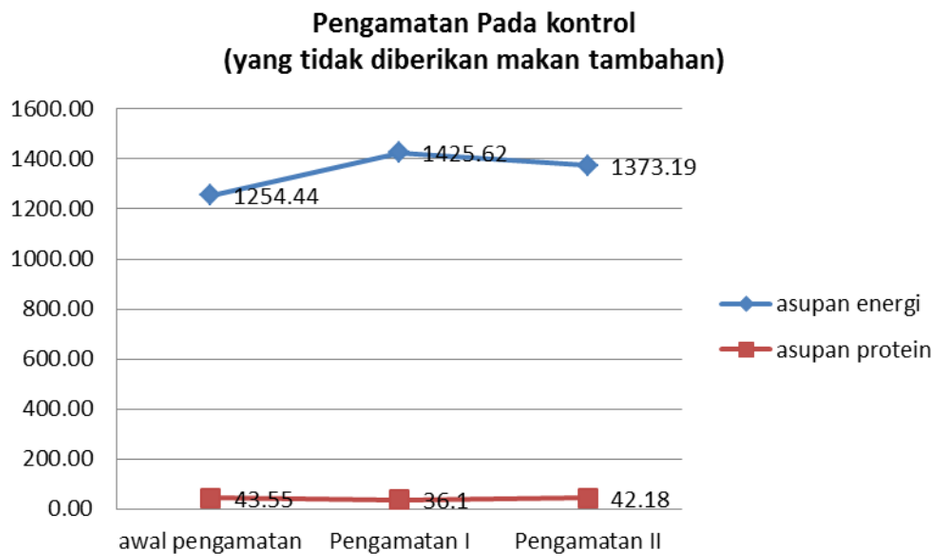

Figure 4. Graph of average energy and protein intake at baseline to end of observation for control group not given complementary food.

The average energy intake in the control group of complementary feeding treatment experienced a slight increase at the end of the observation. At the beginning of observation the energy intake is 1255.44 kcal, increased to 1425.62 kcal, then decreased 1373.19 kcal at the end of the observation. In contrast to energy intake, protein intake tends to decrease. At the beginning of observation protein intake of 43.55 gr, at first observation down to 36.1, then increased to 42.18 gr at the end of the observation.

b. **Differences in intake in the control group were not given additional food at the beginning and end of the observation.**

Table 6 Differences in intake in the control group were not given complementary feeding

Variables	Baseline	Endline	Sign (p)
Energy intake	1255.44	1373,19	0.19
Protein intake	43.55	42.18	0.00

Based on table 6, the energy intake of preschool children at the beginning and end of observation in the control group who were not given supplementary food did not have a significant difference (p = 0.186). While protein intake of preschool children at the beginning and end of observation in the treatment group had significant differences (p = 0.000). The result of the analysis using paired sample t test with interpretation H0 accepted, with probability value> 0.05 on energy intake, whereas H0 is rejected, with probability value <0.05 on protein intake.

6. **Differences in nutritional intake between treatment groups and control groups at baseline and end of observation**

Table 7 Differences intake of treatment groups at baseline and end of observation

Variable	Baseline			Endline		
	Treatment	Control	p	Treatment	Control	p
Energy intake	1419	1254	0,025	1446	1373	0,003
Protein intake	48,5	43,5	0,000	38,6	42,1	0,000

At baseline, there was a difference between the intervention group and the control group on energy intake (p = 0.025) and protein intake (p = 0.000). while at the end of the observation there was also a difference between the intervention group and the control group on the energy intake (p = 0.006) and protein intake (0.000). The result is based on analysis result using independent sample t test with interpretation H0 rejected because probability value <0.05.

DISCUSSIONS

1. **Differences in changes in nutritional intake between treatment groups (given nutritional counseling) and control group (not given nutritional counseling)**

The results showed that there was a difference between treatment groups (given nutritional counseling) and control group (not given nutritional counseling) on energy intake and protein intake at the beginning and end of observation.

The average of energy intake in the treatment group (given nutritional counseling) at the beginning of observation was 1419,35 kcal, whereas in the control group (not given nutrition counseling) was 1254,44 kcal. This shows the difference in food intake in preschool children who have difficulty eating. Provision of basic feeding rules education to parents / carers involved in the process of child feeding is an intervention that can be done to overcome the picky eater.

The result of this research is in line with research of Kadarhadi (2012), that is there is difference of nutritional status of children with feeding difficulties at the beginning and end of observation in treatment group whose parents are given feeding rules counseling seen from HAZ score.

Preschoolers are semi-active consumer groups, so the fulfillment of nutritional needs is still dependent on others, especially mothers or caregivers (Soedibyo, 2008). Differences in food intake in the treatment group (given nutritional counseling) with the control group (not given nutritional counseling) were caused by the mother's behavior on basic feeding rules. As many as 99% (n = 99) of preschool mothers / caregivers who have difficulty eating have basic feeding rules in less categories.

The results show that nutritional intake is strongly associated with mother and child rather than between father and child. In addition, the eating habits of parents have an impact on nutritional intake in preschool children (Oliveria, 2008). Research shows that poor feeding practices of the elderly or because of insufficient experience can cause the child to fail to grow (williams, 2005).

Types of feeding difficulties inappropriate feeding practice is a practice of feeding the child that is not in accordance with age or stage of development. Most of the improper feeding practices conducted by the subject's parents in this research in the form of feeding children while playing and watching television.

Feeding children accompanied by playing and watching television can cause children to be unfocused on their diet, so often children can not eat their food. In addition, improper feeding practices, but often encountered in this study, are child feeding that is incompatible with the age stages.

Management that can be done to overcome this problem of improper feeding practices is to provide education about basic feeding rulester to parents and all caregivers who are involved in the process of feeding the child.

2. **Differences in changes in nutritional intake between treatment groups (given PMT) and control group (not given PMT).**

The results showed that there was a difference between treatment groups (given PMT) and control group (not given PMT) on energy intake and protein intake at the beginning and end of observation.

The average of energy intake in treatment group (given PMT) at the beginning of observation was 1446,88, while in the control group (not given PMT) equal to 1373,19 kcal. This shows the difference in food intake in preschool children who have difficulty eating where the provision of PMT aims to increase nutrient intake, especially energy and protein on the recipient.

The study was inconsistent with the Mayasari (2011) study in schoolchildren aged 7-12 years, who stated that there was no difference in energy and protein intake between primary school recipients and non-PMT-US recipients. Supplementary feeding has not been able to contribute sufficiently to increase energy and protein intake in the recipients. It is influenced by many factors including nutritional content in supplementary foods not in accordance with the stipulated provisions due to limited funds.

Many factors that cause children to experience difficulty to eat (picky eater) such as history of exclusive breastfeeding and history of giving of breast milk. Preschool-aged children in Puuwatu sub-district have a history of breastfeeding and formula milk of 55%, while breast milk alone is only 28%, while 86% of preschool-aged children get food at 0-6 months. Supplementary feeding aims to increase intake, especially energy and protein intake for preschoolers that impact their nutritional status.

Basically eating is a learning process, so introducing the food menu in children should be done gradually. Starting from the finest textured food to the rough, from simple to complete side dishes. Then when the child is willing to do by him/her self, parents need to motivate thus the child feels comfortable and so eager to eat.

CONCLUSIONS

1. The energy intake of preschool children with category less than 79% and enough equal to 21%, while for protein intake category less by 22%, and enough equal to 78%.
2. There is no difference in energy and protein intake in preschoolers who have difficulty eating at the beginning and end of observation in the treatment group with nutritional counseling.
3. There is a difference in energy and protein intake in preschoolers who have difficulty eating at the beginning and end of observation in a control group that is not given nutritional counseling.
4. There is a difference in energy and protein intake in preschool-aged children who have difficulty eating in the treatment group with nutritional counseling with the control group (who were not given nutritional counseling) at the beginning and end of the observation.
5. There is no difference in energy and protein intake in preschoolers who have difficulty eating at the beginning and end of observation in the treatment group with supplementary feeding.
6. There was no difference in energy intake in preschool-aged children who had difficulty eating at the beginning and end of observation in the control group who were not given nutritional counseling, and there was a difference in protein intake in preschoolers who had difficulty eating at the beginning and end of observation in the control group who were not given nutritional counseling.
7. There is a difference in energy and protein intake in preschool-aged children who have difficulty eating in the treatment group with supplementary feeding with a control group (not given supplementary feeding) at the beginning and end of the observation.

RECOMMENDATIONS

The need to socialize to the Mothers / caregivers about the Basic Feeding Rules to be applied early for preschool children.

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