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Balanced Nutrition Menu Intervention for Toddlers in Children Daycare Center

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ABSTRACT

Background: Children Daycare Centers are alternatives for parents to entrust their children. However, children at the golden age of must be fulfilled their nutritional intake as experiencing lack of food at that time will have a serious impact. This way, efforts should be made to ensure that Children Daycare Centers or in Indonesia is known as *Tempat Penitipan Anak* (TPA), are able to provide the best services to children, both in terms of care and provision of food intake. The research aims at providing intervention needed to change the situation in the site so that the implementation of meals served have a good impact on the children.

Method: This is a pre experimental one group pretest posttest observing children aged 4-6 years. Interventions provided in the form of balanced nutrition food 1 menu cycle for 30 days in accordance with the nutritional adequacy of lunch and snacks. The analysis used was the T- test.

Results: There was a relationship between energy intake and children's nutritional status (P -value 0.024), there was a difference in nutritional status between before and after the intervention (P -value 0.004) .

Conclusion: Childcare places need to apply balanced nutritional food in an effort to maintain and improve the nutritional status of children. The application of a suitable diet is very necessary so that food intake in children becomes optimal. Modification of types of food that can be adjusted to the child's desires based on the nutrition adequacy rate for children.

Keywords-: *Children Daycare , Balanced Nutrition, Nutritional Status, Intervention*

INTRODUCTION

Children daycare, known in Indonesia as *Tempat Penitipan Anak* (TPA), is an alternative for parents to entrust their children for family replacement for a certain period of time for children during parents work as well as the implementation of educational programs (including care) against children from birth to 6 years of age ⁽¹⁾. Children aged 0-6 years are in the golden and critical period. Toddler raised by parents with care for other than parents showed differences in the

development where the children cared for by parents become better than children being cared by others than parents ⁽²⁾. Therefore parenting and organizing meals in children daycare are one of the factors in child development.

For every food administration, both performed non-commercially and commercially such as in the daycares, completeness and the adequacy of nutrients in the food served must be in accordance with the guidelines in the preparation of the food menu being served. In fact, in the city of Palangkaraya, the results of research ⁽³⁾ on food remaining analysis using the Comstock method indicated that the energy served on the first, third and sixth day are meeting the standard ($\geq 80\%$) while the second day, fourth and fifth is not appropriate ($< 80\%$). Proteins served on the first,

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second, third, fifth and sixth days are fitted (80%) while the fourth day is not suitable (<80%). For leftover food remnant based on 6 days of lunch served on the second day is that the remaining food staple is 48.86%, vegetable side dish is 48.86%, vegetable is 56.82%, fruit is 31.82% and on the sixth day, the animal side dish is 51.04 %. Thus, it is concluded that the energy and protein served do not meet the standards. These results also blatantly indicated that that the availability and the intake of children nutrition in the daycare is less than the nutritional adequacy rate . Based on the aforementioned matters, the authors are interested in conducting a research on the intervention of a balanced nutrition menu in the daycares located in Palangkaraya, the capital of central Kalimantan Province, Indonesia.

METHODOLOGY

This research uses quantitative methodology with design *pre-experiment one group pretest posttest*, held in September 2017 in Darussalam Child Daycare Center Palangkaraya , Indonesia. Interventions are given in the form of a balanced nutritional food cycle which is calculated using the nutrition adequacy rate based on age. Balanced nutrition food is given at lunch 30 times in 30 days. The average adequacy of nutritional substances for children lunch each cycle consists of energy =358.29 Kcal and protein of 12.18 gr. The nutritional content is made in a portion of food consisting of lunch and dessert snacks. Every 1 week children are given six times lunch on Monday to Saturday, with different menus every day. The intervention of the effectiveness of the provision of a balanced nutrition diet is measured by assessing the child’s weight between before and after the intervention. In addition, the child’s intake of balanced nutrition is also measured in the form of percentage of intake.

The sample size to be analyzed is 18 samples. Univariate analysis is used to analyze data by describing the results of research on each variable studied. Percentage value is used to display data on children’s food intake as well as the mean, standard deviation, confident interval and minimum-maximum for numerical data on children’s weight. Bivariate analysis is used to analyze the relationship between two variables. Statistical test of *paired t-test* analyzed the difference in average body weight between before and after the intervention as well as the difference in average body weight between adequate intake and poor intake based on nutrients, the degree of significance using α (alpha) = 0.05.

RESULTS

Food nutrition in children is converted into a percentage of intake by comparing nutrient intake with standard intake for the children generating the results of 72.2% of energy intake which is $\geq 75\%$, and 44.4% protein intake which is also $\geq 75\%$.

Table 1 shows that children with $\geq 75\%$ energy intake have an average of Z-Score 0.207, while energy intake < 75% has Z-Score -1.09. Both of these Z-Score values in anthropometric standards assess the nutritional status of children is still in the range of good nutrition. There is a significant difference in the mean score of Z-Score between energy intake $\geq 75\%$ and energy intake < 75%. Table 1 also shows that children with a protein intake of $\geq 75\%$ had an average of Z -Score 0.126, while protein intake < 75% had an average of Z-Score -0.38. There was no significant difference in the average Z-score value between protein intake $\geq 75\%$ and protein intake < 75%.

Table 1. Average Difference Analysis on Nutritional Status of Children

Variable	Intake	Mean Weight / Age	SD	Levene Test	Difference	P Value
Z-Score (Weight / Age)	$\geq 75\%$ Energy Intake (n = 13)	13	0.69	0.121	1.305	0.024
	Energy intake < 75% (n = 5)	-1.09	1.57			

Cont... Table 1. Average Difference Analysis on Nutritional Status of Children

Z-Score (Weight / Age)	Protein intake $\geq 75\%$ (n = 8)	0.126	0.37	0.005	0.507	0.507
	Protein Intake $< 75\%$ (n = 10)	-0.38	1.48			

Table 2. Analysis of Differences in Body Mass Index (BMI) of Children Before and After Intervention

Age	Variable	Description	Mean	Min - Max	Score Correlation Value (R)	Difference	P- Value
4-6 years	BMI Z Score (Body weight / Age)	Before	- 0.43	-2.72 - 1.39	0.951	0.280	0.004
		After	-0.15	-2.5 - 1.58			

The average Z score before intervention was - 0.43 while after the intervention the average Z score is -0.15. The difference in knowledge scores after treatment is an increase of 0.28. Statistically there are differences in the average Z score before treatment and after treatment with p -value = 0.004. The correlation value (r) square produced 95.1. This shows that the provision of balanced nutritional food and eating regulations play a role of 95.1% in improving the nutritional status of children in child daycare while the rest is caused by other factors.

DISCUSSIONS

Organizing meals is a series of activities ranging from menu planning to distribution of food to consumers, including recording, reporting and evaluation activities aimed at achieving optimal health status through proper feeding. Based on its function, organizing meals can be divided into two, namely commercial and non-commercial. The organization of meals at Darussalam Child Daycare is a non-commercial operation, namely the provision of food that is not profitable. Looking at the conditions as in the results of the study, it is concluded that the food administration program still does not follow the standard pattern of service management and technical instructions. This is stated in the results of the study that food management depends on the available funds and menu planning and there are no standard portions or prescription standards.

Results showed that children’s energy intake was mostly > 75%. Children’s energy intake is derived from modification of food that has been provided for 30

times, namely in the form of food types which has been processed in such a way as to increase children’s interest in consuming it. The results also showed that there were differences in the average nutritional status between energy intake $\geq 75\%$ and $< 75\%$. There was a significant relationship between energy intake and nutritional status in children.

Food substances needed by the human body include carbohydrates, proteins, fats, vitamins, minerals and water. Food consumed by children is metabolized by the body so that it becomes energy and is useful for child growth and development. Energy in the human body arises due to the burning of carbohydrates, proteins and fats. Thus, in order to fulfill their energy needs, it is necessary to consume enough food substances into the body. Childhood age 4-6 years is a time when children are very active in carrying out various activities together with their peers (4). When a child has more energy than is consumed, it can cause weight loss. If the child has a lack of energy, it will have an impact on physical growth, mental and endurance (5). This research is in line with the previous research results showing that 91.7% of adequate energy consumption has nutritional status will not experience underweight (6). Another research also shows that there is a significant relationship between energy intake and nutritional status of children (7). Further, children with less chance of energy intake is 2.43 times to experience less nutrition compared to children with adequate energy intake (8). From the results of the study it is concluded that adequate energy intake affects the nutritional status of toddlers better.

Results showed that there was no difference in the average nutritional status between children with protein intake $\geq 75\%$ and $<75\%$. Children with an intake of $\geq 75\%$ are 8 people and $<75\%$ are 10 people, if it is nearly equal it is 1: 1.25. The results of this study are in line with the results which showed no relationship between protein intake and nutritional status ⁽⁹⁾. Also another study showed no relationship between protein intake and nutritional status ⁽¹⁰⁾ and no correlation between protein intake and nutritional status ⁽¹¹⁾.

In fact, proteins chemically have atoms that are the same as fat and carbohydrates, only the difference is the element of nitrogen. One of the important food substances for the body is protein. Protein is a part of living cells and is the largest part after water. Enzymes, hormones, nutrient transporters and blood are proteins. The main function of protein is to build and maintain body tissues. Protein is also the same source of energy as carbohydrates. If the body is in a state of lack of energy zumber such as carbohydrates and fats, the body will use protein to form energy and exclude its main function as a building agent. In children this condition can have an impact on growth disorders. Consumption of adequate protein intake will have an impact on good growth the body's immune system increases, creativity increases and has a strong mentality ⁽¹²⁾ supporting previous research that children with good food intake, as many as 75% were in the category of good nutrition as well ⁽¹³⁾ and children with less protein intake is 2.63 times risk of experiencing poor nutritional status compared to children with adequate protein intake ⁽¹⁴⁾.

Protein intake in the child daycare is a protein intake as long as the children receives a balanced nutrition food modification intervention. Protein intake in the landfill during part of the study was good enough $> 75\%$. The protein is derived from animal protein so that it can provide a fairly good intake. The absence of a relationship between protein and children's nutritional status was due to the average nutritional status of children at both $< 75\%$ and $> 75\%$ intake. In this study, food directly affects the nutritional status of children. This is because the researchers have since sampled the samples by selecting research locations in child care centers so that other confounding variables can be minimized. Balanced nutrition foods that have been modified have an effect on the nutritional status of children, indicated by the difference in Z score value of 0.280. Nutritional

status is a balance between food intake and body needs (output). Children with inadequate food intake both in terms of the amount of intake and in terms of nutritional value will weaken their endurance and easily suffer from pain. If a child experiences a weak immune system, it will certainly affect the child's nutritional status ⁽¹⁵⁾.

Previous research also showed that feeding patterns affect the nutritional status of children. The feeding pattern in question is from the type of food, amount of food (nutritional adequacy) and meal schedule ⁽¹⁶⁾. Children with the right diet were 122 children (89.7%) had nutritional status in the normal category. Food consumption affects a person's nutritional status. Good nutritional status or optimal nutritional status occurs when the body produces enough nutrients that are used efficiently so as to enable physical growth, brain development, work ability and general health at the highest level possible.

CONCLUSION

Child Care Centers in Central Kalimantan Indonesia does not apply a balanced nutritional food in an effort to maintain and improve the nutritional status of children. This may due to lack of the knowledge and feeding toddler may be considered as a social activity only. The Daycare unit should apply a suitable diet is needed so that food intake for children is optimal by modifying types of food that can be adjusted to the child's desires, still based on the nutrition adequacy rate in children.

Ethical Clearance: The Ministry of Health Polytechnic approved this research in Central Kalimantan, Indonesia. Ethical clearance was obtained from the Faculty of Medicine Palangkaraya University, Indonesia. A research permit was requested from the local health authorities. We also wish to thank all the participants who contributed to this study.

Conflict of Interest: Nil.

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