The Relationship between theImplementation of Nutrition Conscious Families (KADARZI) and the Toddler Nutrition Status: A Cross Sectional Study

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Abstract

Resolving nutritional problems can be done from the time of pregnancy until the child is 5-year-old. The purpose of this study was to determine the relationship between the application of nutrition awareness family program or *Keluarga Sadar Gizi* (KADARZI) at the household level with the toddler nutrition status. This study was an observational analytic study, with a cross sectional study research design. The sample consisted of 42 toddlers in Libukang Mandiri Village. Data collection was done by weigh and height measurement and nutrition level behavior questionnaire. The results of the research shows that the KADARZI component has a significant relationship. Itwas the consumption of various foods (*p value = 0.006),* weighing regularly *(pvalue = 0.017).* Meanwhile, the nutrition level component has no significant relationship, which was iodized salt consumption *(p value = 0.681)*, exclusive breast milk *(p value = 0.066)*, and vitamin A nutrition supplement *(pvalue = 0.652)*. Furthermore, there is a significant relationship of KADARZI on a composite basis with toddler nutrition status*(p value = 0.044)*. The better the application of KADARZI at the household level, the better the nutrition status of toddlers. It is expected that the mother and all family members should behave well in maintaining nutrition level so that the family members always live healthy and have proper nutritional intake.

Keywords: *KADARZI; NutritionStatus; Toddler.*

Introduction

The nutritional state is the level of activity in the process of utilizing nutrients for body maintenance, growth, and development as a result of the food and beverages consumption at mealtime[(1)]. Malnutrition can occur from several consequences, namely imbalance intake of nutrients, digestive disease factors, absorption and infectious diseases[(2)]. Malnutrition in childhood is a global health problem. Data from the World Health Organization (WHO)shows that malnutrition is the cause of under-five mortality, such as in sub-Saharan Africa 28% and Latin America 7%[(3)].

Based on the national basic health research or *Riset Kesehatan Dasar* (RISKESDAS) in 2018, the prevalence of under-five children with malnutrition decreased from 14.43% in 2016 to 14.00% in 2017 [(4)]. One of the steps in tackling the high rate of malnutrition in Indonesia, the government has implemented the nutrition awareness family programor *Keluarga Sadar Gizi* (KADARZI). KADARZI is a family with all the members maintaining balanced nutritional behavior and they are able to recognize health and nutrition problems; and able to take steps to overcome nutritional problems encountered by each family member.

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The incidence of malnutrition among toddlers and school-age children in Indonesia shows that nutritional behavior at the family level is still not good, so the problem of malnutrition must continue to get attention because the impact it causes can be long-term problems in households of society[5]. In accordance with research conducted by Wijayanti, et al. (2017) on the behavior of a nutritionally conscious family in toddlers in Tulungagung, the result states that children with malnutrition have a negative impact on physical and mental growth, which in turn will hinder learning achievement[6]. Another result is a decrease in immune system which causes the loss of a healthy life span for children under five, and a more serious impact is the incidence of disability, high morbidity and accelerated death[7]. The purpose of this study was to analyze the relationship between KADARZI behavior at the household level and the nutritional status of children under five.

Method Research

This type of research is observational study with a cross-sectional method. The dependent variable of this research is toddler nutrition status, while the independent variable is KADARZI behavior. This research was conducted from April to July 2019. The unit of analysis for this study was households with mothers of families as the research respondents. The sampling technique was total sampling and the minimum number of analysis units obtained was 42 samples of toddlers who meet the inclusion criteria, among others they were : 1) toddlers aged 12-59 months who live in the village of Libukang Mandiri Village, Luwu Timur Regency; 2) registeredon the data of healthy family card or *Kartu Menuju Sehat* (KMS)and/or one way health public serviceor *Pos Pelayanan Terpadu* (POSYANDU); and 3) not having moderate pain during pre-study or data collection study process. The research questionnaire used is a structured questionnaire or list of questions to collect KADARZI behavior data and anthropometry for assessing the nutritional status of toddlers. The analysis used the chi square test with a confidence level of 95%.

Results

Table 1. Distribution of KADARZI Behavior and Toddler Nutrition Status in Libukang Mandiri Village, Luwu Timur Regency

KADARZI Behavior	n	Percentage (%)
Food Intake Variation		
Proper	29	69
Improper	13	31
Weigh Measurement		
Regular	35	83.3
Irregular	7	16.7
Iodized Salt Consumption		
Yes	36	85.7
No	6	14.3
Exclusive Breastfeeding		
Yes	28	66.7
No	14	33.3
Vitamin A Nutrition Supplement		
Yes	40	95.2
No	2	4.8
KADARZI Behavior Implementation		
Implement KADARZI	19	45.2
Do Not Implement KADARZI	23	54.5
Toddler Nutrition Status		
Malnutrition	0	0
Less Nutrition	8	19.0
Good Nutrition	34	81.0
Over Nutrition	0	0

In Table 1, it can be seen that the KADARZI component achieving the most coverage is the vitamin A nutrition supplement intake as much as 95.2% while the KADARZI component achieving the lowest coverage is exclusive breastfeeding as much as 66.7% based on the children who are given exclusive breastfeeding.

Table 2. The Relationship between KADARZI Behavior with Toddler Nutrition Status in Libukang Mandiri Village, Luwu Timur Regency

KADARZI Behavior	Toddler Nutrition Status				p value
	Less Nutrition		Good Nutrition		
	n	%	n	%	
Food Intake Variation					
Proper	2	4.8	27	64.3	0.006
Improper	6	14.2	7	16.7	
Weigh Measurement					
Regular	4	9.5	31	73.8	0.017
Irregular	4	9.5	3	7.2	
Iodized Salt Consumption					
Yes	7	16.7	29	69.0	0.681
No	1	2.4	5	11.9	
Exclusive Breastfeeding					
Yes	3	7.2	25	59.5	0.066
No	4	11.9	9	21.4	
Vitamin A Nutrition Supplement					
Yes	8	19.0	32	76.2	0.652
No	0	0	2	4.8	
KADARZI Behavior Implementation					
Implement KADARZI	1	2.3	18	42.9	0.044
Do Not Implement KADARZI	7	16.7	16	38.1	

Table 2 is summarized the results of statistical analysis with a confidence level of 95% and a significance level of $\alpha = 0.05$. Table 2 shows the results of this research in p value. It shows that the KADARZI component has a significant relationship. It was the consumption of various foods (*p value = 0.006),* weighing regularly *(p value = 0.017).* Meanwhile, the nutrition level component has no significant relationship, which was iodized salt consumption *(p value = 0.681)*, exclusive breast milk *(p value = 0.066)*, and vitamin A nutrition supplement *(p value = 0.652)*. Furthermore, there is a significant relationship of KADARZI on a composite basis with toddler nutrition status *(p value = 0.044)*. It can be said that KADARZI implementation behavior as a whole has a significant relationship with the nutritional status of toddlers.

Discussion

Fulfillment of toddler nutrition intake depends closely on the behavior patterns of parents. Food consumption patterns can be influenced by the level of awareness of family nutrition. By KADARZI, family is able to recognize, prevent, and overcome nutritional problems for each member[1]. One alternative to tackling the high rate of malnutrition in Indonesia is the establishment of KADARZI program held by the government. KADARZI is a family with all the members maintaining balanced nutritional behavior and they are able to recognize health and nutrition problems; and able to take steps to overcome nutritional problems encountered by each family member. The targets of KADARZI program are families with toddlers, families with pregnant women, and mother and/or housewives. One of the indicators of KADARZI is eating a certain and balanced variety of foods. Toddlers are said to eat a variety of foods if the toddler consumes food sources that contain carbohydrates, animal protein, vegetables, and fruit. Toddlers who consume various kinds are still very low because they have not reached the 80% target set by the Ministry of Health[4]. The results of the research conducted in Libukang Mandiri Village showed that the coverage of consumption of a variety of foods in children under five only reached 69.0, it was still lower than the target by the Ministry of Health which is 80%. Based on the results of interviews with mothers of children under five, the consumption of various foods is still low, not reaching 80% of the target of the Ministry of Health. This is due to various factors such as the absence of an available market in the area and also inadequate access to transportation because the

respective access is a remote area. In addition, it can also be caused by the factor of mother's knowledge about the benefits of staple food being higher than the benefits of animal and vegetable side dishes as well as vegetables and fruit. It can cause toddlers to not eat a wide variety of foods with proper nutrients [8].

Indicator of weight measurement of KADARZI has reached the target above 80%, namely 83.3% of children's weigh under five are measured regularly. The result shows that KADARZI has a significant relationship to weigh measurement regularly to the nutritional status of children under five with a p value = 0.017. This achievement is due to the support of health facilities and health practitioners in the area by conducting weigh measurement on toddlers regularly. Furthermore, the nutritional status of children as research objects under five can be controlled by health workers. The indicator of iodized salt consumption in Libukang Mandiri Village found that most people in the area have consumed iodized salt with a percentage of 85.7%. However, there are two brands or types of salt used by households that do not contain iodine after the iodine test is carried out. The iodine in salt test has been done by dripping method. If the salt has been dripped, there will be no color change in the salt. However, from the results of the analysis, there was no significant relationship between the use of iodized salt and the toddler nutrition status under five with a value of p = 0.681. This can be derived from the intake of sufficient protein, carbohydrate, and fat to meet the growth and development needs of children so that the use of iodized salt does not have a significant relationship to the nutritional status of children under five. Although there were (11.9%) children who did not consume iodized salt but they had a good nutritional status. The use of iodized salt is also accompanied by proper storage method so that the iodine concentration in salt is maintained. Iodized salt is not resistant to hot temperatures and the use of an open container will cause the salt to evaporate easily which causes the iodine concentration in salt to become smaller[9]. Storage of iodized salt should preferably be in a closed container and use iodized salt when cooking when the food is cooked and the food temperature is not too hot.

Indicator of exclusive breastfeeding is limited on breastfeeding only for babies until the age of 6 months. Based on the results of research in the Libukang Mandiri Village, exclusive breastfeeding is still low. There are only 66.7% of babies getting exclusive breastfeeding from the mothers. This is due to the lack of breastmilk production while most of the people in Libukang Mandiri Village are being farmers, so that most of the mothers work apart from house and from being housewives. They are also garden farmers so that many mothers do not have time to exclusively breastfeed as the area is one of the largest peppers producing areas in South Sulawesi Province. The last KADARZI indicator is vitamin A nutrition supplement in toddlers. Vitamin A plays an important role in the growth of toddlers and vitamin A deficiency can cause xeropthalmia (6). The provision of vitamin A supplements was carried out twice during the past 1 year, namely in February and August. Based on research, toddler who received vitamin A supplements were 95.2% and this figure has reached the target of 80%. Toddlers who received vitamin A were known based on the results of interviews with mothers and health workers on duty in the Libukang Mandiri Village.

In this study, it is known that there is a significant relationship between KADARZI behavior in the household and the nutritional status of toddlers. Better nutritional status of children under five was found more in families implementing KADARZI than in families who are not implementing KADARZI. This shows that the better the KADARZI family behaves, the better the nutritional status of the toddlers who live in it. KADARZI behavior is very important in realizing good nutritional status for toddlers so that toddler nutrition status is closely related to nutritionally conscious families; the family who are implementing KARDAZI. This is in line with research conducted by Hartono, et al. (2017). The result found the relationship between nutrition-conscious family behavior (KADARZI) and clean and healthy living behavior in household arrangements with the nutritional status of toddlers aged 24-59 months [10]. Research conducted by Wijayanti, et al. (2017) on the relationship between the application of KARDAZI to the toddler nutrition status under five has a significant relationship[6].

Conclusions and Suggestions

In this study, it can be concluded that there is a significant relationship between KADARZI behavior at the household level with the toddler nutrition status under five (p value = 0.04). It is recommended that health workers increase the socialization of KADARZI contention in family structures. It is also expected that health practitioners and families tag along to increase cross-program and cross-sector cooperation to achieve levels of content at the household level due to KADARZI implementation.

Ethical Clearance: The results of this study found that eating culture in the local area can affect eating patterns due to geographic conditions, thus impacting on food and energy use so that it affects changes in nutrition status.

Acknowledgement: We would like to thank the people and government of Luwu Timur Regency for their permission and big support to develop this research in the respective area.

Research Funding: Funds used during this research came from private funds.

Conflict of Interest: The author(s) declare that they have no conflict of interest.

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