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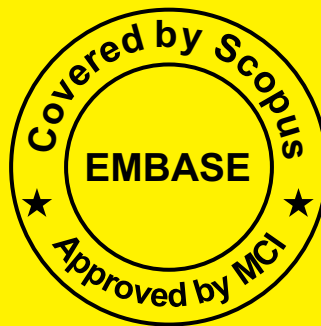
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Study of Effectiveness Taburia Programs (Multi Gizimicro Substances) at Children Ages 6-24 Months in South Sulawesi Province

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ABSTRACT

This study aims to look at the effectiveness of the taburia program on growth and development in children aged 6-24 months in South Sulawesi. The design of the study is an evaluation study, which is to evaluate the administration of powder taburia, and its impact on nutritional status and the growth and development of children aged 6-24 months. This research was conducted in Makassar, Pangkep and Jeneponto. Samples were children aged 6–24 months who were selected by 3 Public Health Center and then 3 villages with a sample of 675 children, but until the end of the study the remaining 398 children. The results of the study found that the overall taburia program was effective against changes in BB and PB significantly. For changes in z-skore BB/U is not significant while PB/U is significant. For the average BB baby changes in Jeneponto that are obedient to those who do not comply, Pangkep and Makassar are better compliant. As for changes in the PB/U z-score, the three regions that are not compliant change their body length better. For overall gross motor development, there are more people who do not comply with consuming taburia. For Makassar, only 5 children were obedient and normal motoric development and 36 children did not comply. Pangkep whose motor development is normal and obedient to 25 children, there are 2 children who obey and motor development above normal. Different from Jeneponto, none of them were normal who obeyed, while those who did not comply with normal motoric development were 95 children, some even had late development there were 12 children, although there was also one child above normal motor development. In conclusion, the program of providing taburia is effective against the increase and development of the bodies of children aged 6-24 months. It is recommended that giving taburia be recommended because it has an influence on a better line of growth and development.

Keywords: *Taburia, Growth, Rough Motor Development, Children, Multi Gizimicro*

Introduction

In Indonesia, many infants and children aged 6-24 months have inadequate nutritional status, which is

reflected in the high prevalence of underweight and stunting. One indicator of low nutritional status is the high prevalence of malnutrition. The results of survey Riskesdas show that there was an improvement in nutritional status aged 6-24 months from 2005 to 2007, from 9.7% to 5.4%. During the same period, the prevalence of malnutrition decreased from 14.8% to 13.0%.^{[1],[2]}

At present, the national prevalence of malnutrition and malnutrition (6-24 months) has been reduced according to the target of the Medium Term Development Plan (RPJM) to achieve nutrition improvement programs (20%) and the Millennium Development Goals (MDGs) target in 2015 (18.5 %) has been achieved in 2007, although it has not been evenly distributed throughout Indonesia.

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Several programs have been carried out to tackle nutritional disasters in Indonesia. Among the MP-ASI giving program in the early 2000s, although it has not provided maximum results because of the problems faced in the field.^{[3],[4]} To overcome various problems in MP-ASI, multi micronutrients have been given the name Taburia. Before that, the Indonesian Ministry of Health at that time had carried out a study on the efficacy of Taburia and 2 other types of Taburia (Anuka and Vitalita) to assess the effect of the amount of each Taburia in treating anemia in children.

A validation study on the efficacy of taburia studies showing that, although it did not significantly affect growth, it had a significant impact on infant motor development.^{[5],[6]} The results of this study also showed an increase in mean Hb levels in the intervention group (0.21 ± 1.24 mg/dl). Research results in Indonesia reinforces that the effect of taburia vitalita does not have a significant further impact on children's growth.^[7] However, improvements in reducing the impact of anemia have shown positive results such as the study in North Jakarta, where most children under five (95%) want to consume Taburia so that the impact on toddlers suffering from anemia drops by 37.6% (from 62.3% to 24.7%).^[8]

Nutritional problems, besides being related to iron deficiency, are also related to the fact of food availability in the household. Besides being aggravated by family nutrition care that has not supported such practices as exclusive breastfeeding is still very low (7.8%), weighing baduta in Posyandu is still low (43%), consumption of iodized salt with sufficient quality, is still lacking (73%), and the family eats a wide variety.^[2]

Method

This study is an evaluation study, which assesses the administration of powder taburia, and its impact on nutritional status and the growth and development of children aged 6-24 months. Giving taburia powder containing 15 kinds of vitamins and minerals is carried out for 4 months (120 days), every two days, according to the duration of the PMT program.

This research was conducted in South Sulawesi (province of the NICE program). The sample of this study was children aged 6-24 months who were enrolled in the research program giving taburia. Regional areas include the cities of Makassar, Pangkep and Jenepono. Each region selected 3 health centers using purposive sampling, based on the distance from the center of the capital (near, medium and far). In each puskesmas 3 villages were selected using Probability Proportional to Size. Followed by the selection of families with socio-economic relative, the same as using Systematic Random Sampling. The number of samples is 3 cities/districts x 3 health center x 3 villages x 25 children (6-24 months) = 675 children.

In the first month (T0) the number of samples is still the same with a total of 675 samples. In the second month (T1) to the fifth month (T4) there was a reduction in the number of samples. This happens, because exclude is aged (> 24 months), is absent on the grounds of returning home or is not present at the time of data collection, moving, and dying. The final sample number was 398 samples. For samples of gross motor development, based on the measured melastone scale measurements were children aged 6-18 months, so that those who met the criteria were 484 children. At the end of the study there were 274 remaining samples.

Weighing the weight using a portable calibrated scale of 0.1 kg and measuring body length using microtox. While for measuring motor development using the Milestone Motor Development scale. The results of these measurements provide clues as to whether or not, developmental growth is more or less normal.

Results

The results of this study were carried out in South Sulawesi Province, the results of data analysis were presented in table form accompanied by the following narrative.

Table 1: Distribution of Baduta according to Characteristics of Parent Education, Age Group and Gender

Variable	n	%
Mother's Education		
Not completed in primary school	57	8,5
Finish elementary/middle school	446	66,1
Finish high school/university	172	25,4
Total	675	100,0
Father's Education		
Not completed in primary school	73	10,8
Finish elementary/middle school	378	56,0
Finish high school/PT	224	33,2
Total	675	100,0
Age Group (Months)		
6-11	202	29,9
12-24	473	70,1
Total	675	100,0
Gender		
Man	325	48,1
Woman	350	51,9
Total	675	100,0

Child Nutritional Status and Compliance Consume Taburia**Table 2: Distribution of changes in BB, Z BB/U score and rate of BB change in infants under age 6-24 months for 4 months in the coverage area of the Taburia administration program**

Variable	Compliance with Taburia Consumption				P*
	Obey		Not Obey		
	Mean	SD	Mean	SD	
Change of BB (T0-T4)					
Pangkep (n = 137)	0,89	± 0,58	0,60	± 0,73	0,015
Makassar (n = 90)	0,69	± 0,24	0,58	± 0,65	0,255
Jenepono (n = 171)	0,98	± 0,56	0,98	± 0,75	0,978
Total (n = 398)	0,85	± 0,52	0,80	± 0,75	0,449
Change of z-skor BB/U (T0-T4)					
Pangkep (n = 137)	0,15	± 1,09	0,16	± 0,83	0,915
Makassar (n = 90)	-0,06	± 0,50	0,05	± 0,93	0,584
Jenepono (n = 171)	-0,59	± 0,79	-0,61	± 0,88	0,941
Total (n = 398)	0,03	± 0,97	-0,24	± 0,94	0,020
Increase rate of BB (T0-T4)					
Pangkep (n = 137)	1,17	± 0,69	1,14	± 0,53	0,753
Makassar (n = 90)	0,89	± 0,35	0,98	± 0,58	0,536
Jenepono (n = 171)	0,75	± 0,37	0,73	± 0,58	0,897
Total (n = 398)	1,06	± 0,61	0,89	± 0,59	0,014

*Independent t test

Table 3: Distribution of PB changes, Z PB/U scores, and rate of change in PB underfives aged 6-24 months in the coverage area of the Taburia administration program

Variable	Compliance with Taburia Consumption				P*
	Obey		Not Obey		
	Mean	SD	Mean	SD	
Change of PB (T0-T4)					
Pangkep (n = 137)	4,68	± 2,75	4,54	± 2,14	0,749
Makassar (n = 90)	3,57	± 1,40	3,90	± 2,33	0,537
Jeneponto (n = 171)	3,01	± 1,50	2,90	± 2,30	0,890
Total (n = 398)	4,26	± 2,46	3,54	± 2,37	0,014
Change of z-skor PB/U (T0-T4)					
Pangkep (n = 137)	0,15	± 1,09	0,16	± 0,83	0,915
Makassar (n = 90)	-0,06	± 0,50	0,05	± 0,93	0,584
Jeneponto (n = 171)	-0,59	± 0,79	-0,61	± 0,88	0,941
Total (n =3 98)	0,03	± 0,97	-0,24	± 0,94	0,020
Increase Rate of PB (T0-T4)					
Pangkep (n = 137)	1,17	± 0,69	1,14	± 0,53	0,753
Makassar (n = 90)	0,89	± 0,35	0,98	± 0,58	0,536
Jeneponto (n = 171)	0,75	± 0,37	0,73	± 0,58	0,897
Total (n = 398)	1,06	± 0,61	0,89	± 0,59	0,014

*Independent t test

Table 4: Relationship between compliance with gross motoric development in the coverage area of the Taburia administration program

Compliance with Taburia Consumption	Motor Development Status (T0-T4)						P*
	Late		Normal		Above Normal		
	n	%	n	%	n	%	
Makassar							
Obey	0	0,0	5	100,0	0	0,0	0,599
Not Obey	2	5,3	36	94,7	0	0,0	
Pangkep							
Obey	0	0,0	25	92,6	2	7,4	0,023
Not Obey	0	0,0	68	100,0	0	0,0	
Jeneponto							
Obey	0	0,0	0	0,0	0	0,0	-
Not Obey	12	11,1	95	88,0	1	0,9	
Total							
Obey	0	0,0	30	93,8	2	6,3	0,012
Not Obey	14	6,5	199	93,0	1	0,5	

*Chi-Square

Discussion

The diet of infants and children in developing countries, especially in Indonesia, especially in rural areas, has not been able to fulfill the nutrients needed, especially at the age of 6-24 months which at this age there is very rapid physical and psychological growth and development. Therefore, to meet needs that cannot be met from daily food intake can be done by supplementing certain nutrients needed, one of which is taburia.

Given that in this study did not have control, one of the things that could be used as a substitute for control was the existence of a variable of compliance in this study. By using the parameters of weight gain each month it appears that the changes that occur are very small. The average increase in body weight measured is only around 1% every month. The results of this study are in line with the research in Indonesia, which shows that, sprinkle vitalita which contains 14 vitamins and minerals does not have a significant further impact on children's growth.^[7]

However, in terms of quantity, it can be seen that baduta who adhere to consuming taburia in this study have better weight gain and better motor development compared to those who do not adhere to consuming taburia.

Compliance with Taburia Consumption: Compliance with health programs is behavior that can be observed and

can be directly measured. Commitment or attachment to a program is called adherence, which may be eternal. Both compliance and loyalty refer to the ability to maintain programs related to health promotion

Interventions in this study used micronutrients in the form of taburia. Provision of small amounts of micronutrients has been proven to have a great impact. Therefore, determining the level of compliance for consumption of taburia is attempted not to use the cut-off point that is too high. For better data variations, use a 60% cut off point.^{[8],[9]}

Nutritional Substance and Nutritional Status: Providing nutritious food in sufficient quantities at the time of year is a matter that needs serious attention so that children do not fall into malnutrition. Especially in that period weaning occurs, namely the transition between breastfeeding and adult food as a source of energy and main nutrients. Many children experience micronutrient deficiencies during their growth period. A study conducted in Indonesia, Peru, South Africa and Vietnam shows that children's growth is disrupted due to lack of micronutrients.^{[10],[11],[12],[13]}

After a two-year-old child has enough nutrients, both the energy and protein sufficiency must be met from daily food. As is known, after a child is 6 months old, breastfeeding alone is not sufficient for the child.^[14]

One of the things that allegedly contributed to the slow growth of baduta in this study was the low intake of macro nutrients through insufficient food. Does not meet the recommended nutritional adequacy rate. In addition to protein, the intake of other macro nutrients consumed does not meet the recommended nutritional standards. While for micronutrients only the intake of vitamin A, vitamin D and vitamin B12 are on average that meet AKG standards.

Children who get food intake that is less in quantity and or quality (nutritional value) will affect their growth and development. One result of lack of food intake is the occurrence of deficiencies (deficiencies) of micronutrients both vitamins and minerals.^[12]

In this study one of the most important minerals in growth, namely zinc, was found to be very low intake, on average only 40%. Zinc (Zn) is an essential nutrient and has received considerable attention in various recent studies because of its role in the human body^[9] Zinc plays a role in the operation of more than 10 types of enzymes. Acts in the synthesis of Adenosine Dinukleoside (DNA) and Ribonucleoside Adenosine (RNA), and protein. So if zinc deficiency occurs it can inhibit cell division, tissue growth and repair.^[15]

In this study, Fe intake was also less than 50% of AKG. Iron (Fe) is a micronutrient that is essential in producing hemoglobin which functions in transporting oxygen from the lungs to body tissues, transporting electrons in cells, and in synthesizing iron-containing enzymes needed to use oxygen while producing cellular energy.^{[13],[15],[16]} Research on taburia as an alternative to adding micronutrients has finally encountered obstacles if macro nutrient intake is deficient.

Conclusion/Recommendation

The program of giving taburia is effective against the increase and development of the bodies of children aged 6-24 months. It is recommended that giving taburia be recommended because it has an influence on a better line of growth and development.

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Ethical Clearance: The study was approved by the institutional ethical board of the Universitas Muslim Indonesia.

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