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The effect of supplementary feeding (PMT)-child recovery intervention in the coastal area of North Buton Regency, Southeast Sulawesi Province

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Abstract

Background: Malnutrition in Coastal Areas is still a public health problem in low- and lower-middle-income countries (LMICs). Nutritional status plays an important role in supporting growth, physical and cognitive development according to the child's age. The purpose of this study is to analyze the effect of Supplementary Feeding Recovery (PMT-P) on children's nutritional status.

Methods: Experimental research design with Pretest and Posttest One Group Design approach. Involving 75 mothers who have children aged 6-24 months in the work area of the North Buton Regency Health Office, the child sample was selected by purposive sampling with inclusion criteria such as children who have growth below the red line (BGM) or experience very thin nutrition, toddlers who consume PMT-P from the government program in the form of biscuits, given regularly for up to 90 days. Children aged 6-11 months are given 80 gr/day equivalent to 8 pieces of biscuits (2 packs) while children aged 12-24 months are given 120 gr/day equivalent to 12 pieces of biscuits (3 packs). The instruments used in this study were the Healthy Towards Card (KMS) and the measurement of the toddler's weight was carried out using a Msumed brand digital scale with an accuracy of 0.1 cm while the measurement of the body length and height of the toddler was carried out using an Msumed brand infantometer and a statuemeter with an accuracy of 0.1 cm. The data was analyzed using *a paired t-test (significant p<0.005).*

Results: The results showed that there was an effect of PMT-P administration before and after the intervention for 3 months on the nutritional status of children (*p = value 0.000*).

Conclusion: There is an effect of giving PMT-P before and after the intervention for 3 months on the nutritional status of children. Therefore, the Government must continue to increase PMT-P as an alternative in management of malnutrition in children aged 6 to 24 months in North Buton Regency, southeast Sulawesi Province, Indonesia

Keywords: Children; Malnurition; PMT-Rehabilitation; Coastal areas

1. Introduction

The period of supplementary feeding of children begins at the age of 6 months, is given on time, good nutritional quality, safe, and given correctly to meet the nutritional needs of infants and toddlers{1,2,}. Children aged 6-23 months have a higher risk of developing malnutrition if they do not receive enough and appropriate complementary foods.3}. Nutritional status is one of the indicators of a child's health, requires sufficient nutritional intake to support the physical growth and quality of life of children in the future, malnutrition can be prevented with a good understanding of nutrition, the family is able to provide nutritious food to children and maternal parenting is oriented to the growth and

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development of children aged 6-24 months{4}. Some Previous studies reported that supplemental feeding that is of the highest quality and started in children from 6 months of age has been shown to reduce the risk of moderate stunting by 7% and severe stunting by 15%, making it effective in improving growth outcomes in children under 2 years of age{5}. Supplemental feeding had an effect on weight gain in children, showing that there was a difference in the nutritional status of toddlers before and after the administration of PMT-P based on BB/TB and BB/U with *p=0.000 and p=0.002* {6}. A number of interventions have been successful in improving the nutritional status of children aged 6-24 months both anthropometrically and biochemically, during the complementary feeding period including food fortified blends, locally or commercially produced or manufactured dietary supplements{7}. The incidence and causes of malnutrition in children in the first 2 years of life from in low- and middle-income countries (LMIC), confirmed that the tragic impact of malnutrition on children's health has an 8-fold increased risk of death before the age of 24 months{8,9}. Intended in the Coastal area{10}. Malnutrition in children is a major public health problem, globally in 2020, <5 years old, it is estimated that 45 million people will experience wasting (too thin), and 149 million are estimated to be stunted{11}. In Indonesia, it is known 7.7% experience wasting and 21.6% experience stunting and it is estimated that 38% of children aged 6–59 months experience anemia in Indonesia{11}.

Southeast Sulawesi Province, it was reported that children with malnutrition status in 2019 had 271 cases and increased to 471 cases in 2020. Meanwhile, in North Buton Regency in 2020, the prevalence of undernutrition was 223 cases or 29.83%, while 22 toddlers experienced malnutrition{12}. A preliminary study conducted in November 2021 in 4 health centers in North Buton Regency that the number of children recorded in the KMS book showed that their growth curve was below the red line of 625 children in 2019 and increased to 641 children in 2020{13}. In Indonesia, children who are recorded in KMS have a weight below the red line indicating a state of malnutrition status (BB/U) <-3 SD) or severely underweight (kwashiorkor, marasmus and marasmus kwashiorkor{14}. The above problems, we are interested in conducting a study with the purpose of analyzing Effect of Recovery Supplementary Feeding on Child Growth which is recorded below the red line in the coastal area of North Buton Regency, Southeast Sulawesi Province

2. Methods

This study is an evaluation of the effectiveness of Recovery Supplementary Feeding (PMT-P) on the nutritional status of children aged 6-24 months in the Coastal area, the working area of the North Buton Regency Health Office, Southeast Sulawesi Province. This PMT-P is part of the North Buton Regency Regional Government program in a series of activities. Experimental research was carried out with the Pretest and Posttest One Group Design approach. The child sample was selected by purposive sampling of 75 children with inclusion criteria such as children who have growth below the red line (BGM) or experience very thin nutritional status, toddlers who consume PMT-P from the government program in the form of biscuits, given regularly for up to 90 days. Children aged 6-11 months are given 80 gr/day equivalent to 8 pieces of biscuits (2 packs) while children aged 12-24 months are given 120 gr/day equivalent to 12 pieces of biscuits (3 packs). The instruments used in this study are the Towards Healthy Card (KMS), and the measurement of children's weight is carried out using a digital scale of the Msumed brand with an accuracy of 0.1 cm and for the measurement of body length and height using an infantometer of the Msumed brand and a statuemeter with an accuracy of 0.1 cm. The data in the analysis used *a paired t-test (significant p<0.005)*

3. Results and discussion

Table 1, shows the results of univariate analysis of the characteristics of child respondents selected to get PMT-P based on gender, and age of the child as follows;

Table 1 Distribution of Respondents Based on Characteristics of Children Aged 6 - 24 Months

Age	**n**	**%**
6-12	27	36
13-24	48	67
Gender		
Man	40	53.3
Woman	35	46.7
Total	75	100.0

Source: Primary data processed

Table 2 shows that there is an effect on nutritional status before and after receiving PMT-P in toddlers *p-value 0.000*

Table 2 Analysis of the effect of PMT-P administration before and after intervention in malnourished toddlers

Category	Mean±SD	Median (Q1-Q3)	P-value
Weight loss before	6.5646±1.087	6.5 (5.95-7.2)	0,000*
Weight after	8.4013±2.1134	8 (6.9-9.75)	

Paired t test*

Problems in child development can occur because nutritional needs are not met, so they experience various nutritional problems such as nutrition with insufficient protein energy. Nutritional status is influenced by several factors, including the nutritional value of the food eaten, the presence or absence of additional food, family income or purchasing power, knowledge about nutrition and health, the reach of health services and social environmental factors (Adelina et al., 2019). The provision of recovery supplementary food in the form of manufactured biscuits is one of the government programs aimed at overcoming malnutrition problems in children, as an additional food in addition to daily staple foods (Ministry of Health of the Republic of Indonesia, 2019). PMT Recovery biscuits are formulated to contain a minimum of 160 calories, 3.2-4.8 grams of protein, and 4-7.2 grams of fat per 40 grams of biscuits, for children aged 6-59 months with a feeding period of 90 days according to consumption rules (Ministry of Health, RI, 2021).

The results of our study showed that there was an effect of supplementary feeding in the form of biscuits (PMT-P from the Government Program) before and after the intervention on the nutritional status of children with *a P-value = 0.000.* There was an improvement in the nutritional status of children aged 6-24 months by 69.34%. In accordance with the research of Fitriyanti (2012) showing that there was a difference in the nutritional status of toddlers before and after the administration of PMT-P (Formula and Biscuits) with a value *of p=0.000*, the difference in nutritional status occurred after the administration of PMT-P, namely from 86.4% of malnourished toddlers to 40.9% of malnourished. Our previous study by Aisnah, et al (2022) reported the results of an observational descriptive study using a survey design involving 75 mothers who had children aged 6-24 months, showing that from 75 malnourished children to 23 malnourished children after 90 days of PMT-P administration.

Another study reported that the provision of supplementary food had a very meaningful effect on the change in the nutritional status of undernourished children under five carried out in Manado City Health Centers, involving as many as 70 malnourished children under five who received PMT in the form of rice, biscuits, mung beans, and milk for 90 days or 12 weeks (Hosang, et al, 2017). Furthermore, a recent study revealed that the average overall recovery time of children was 16 weeks of recovery time among children aged 6–59 months who were malnourished and affected nutritional status with a median upper arm circumference of 12.1–12.4 centimeters (AHR = 1.02, 95% CI: 1.01–1.19), who received a special nutritious food/recovery PMT (Melaku, et al, 2024).

In previous critical reviews, against the supporting evidence over the past few decades, research has focused on low-cost diets using locally available foods that are socially acceptable and sustainable rather than PMT-Recovery Manufacturers, it needs to be noted and reinforced that PMT-Recovery solutions are based on local foods in order to be effectively delivered through nutrition programs (Kulkarni & Mamidi, 2019). Furthermore, malnutrition in children in low- and middle-income countries, especially in coastal areas, needs to take advantage of the potential of local PMT and its innovations from marine food sources because the quality of omega-3 and protein content has been widely reported related to the improvement of children's nutritional status. Salma's study, et al (2023) reported that in 100 gr *of Cookies Diadema setosum* contains very high marine protein (8.70 g), zinc 2.29 mg, Iron 2.63 mg can be utilized as PMT-Recovery because it has implications for improving children's nutritional status, considering its potential benefits in reducing the burden of malnutrition efficiently and cost-effectively.

4. Conclusion

There was an effect of giving PMT-P before and after the intervention for 3 months on the nutritional status of the child. The findings of this study provide an experimental indication that PMT-P from the Government Program can continue to be used as an alternative in the management of malnutrition in children aged 6 to 24 months in North Buton Regency. In addition, dietary supplements can be formulated from local ingredients that are readily available, inexpensive and can provide the amount of nutrients needed for the effective recovery of children with malnutrition.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

[1] Bailey RL,Handlebar JS Davis TAAnonymousTS. SchneemanB.O.,Dewey K.G. (2022). Dietary and Complementary Feeding Practices of US Infants, 6 to 12 Months: A Narrative Review of the Federal Nutrition Monitoring Data J Acad Nutr Diet.; 122(12): 2337–2345.e1. Doi:10.1016/j.jand.2021.10.017.

[2] Soesanti I, Saptandari P, Adiningsih S, Qomaruddin B.M. (2020). The practice of complementary feeding among stunted children under the age of two. Infect Dis Rep. ; 12(Suppl 1): 8723. doi: 10.4081/idr.2020.8723

[3] Prasad R, Shukla A, Galhotra A. Feeding practices and nutritional status of children (6-23 months) in an urban area of Raipur, Chhattisgarh, India. J Family Med Prim Care. 2023; 12(10):2366–2372. Pairs: 10.4103/jfmpc.jfmpc_240_23

[4] Salma WO, Adibin, Yuniar N. Analysis of undernourished in children aged 6-24 months in buton north district: cross-sectional study. Journal of Natural & Applied Sciences Pakistan. 2023, Vol. . 4, no. 2,

[5] Das JK, Salam RA, Hadi YB., et al. Preventive lipid-based nutrient supplements given with complementary foods to infants and young children 6 to 23 months of age for health, nutrition, and developmental outcomes. The Cochrane Database of Systematic Reviews, 2019; vol.5, issue 5, CD012611. doi: 10.1002/14651858.CD012611.

[6] Fitriyanti F, & Mulyati T. "The effect of supplementary feeding of recovery (pmt-p) on the nutritional status of malnourished toddlers at the Semarang City Health Office in 2012," Journal of Nutrition College, 2012: vol. 1, no. 1, pp. 373-381,. https://doi.org/10.14710/jnc.v1i1.436

[7] Harrison L, Padhani Z, Salam R, Oh C, Rahim K, Maqsood M, Ali A. (2023). Charbonneau K, Keats EC, Lassi ZS, Imdad A, Owais A, Das J, Bhutta. Dietary Strategies for Complementary Feeding between 6 and 24 Months of Age: The Evidence. Nutrients; 15(13): 3041. Team: 10.3390/NU15133041

[8] Jr Petri WA, Hendrick J, Haque R. Malnutrition: From Mother to Child. Am J Trop Med Hyg. 2024; 111(1):3–4. doi: 10.4269/ajtmh.24-0012

[9] Mertens A, Benjamin-Chung J, Colford Jr JM, Coyle J, et al. Causes and consequences of child growth faltering in low-resource settings. Nature 2023; 621: 568–576

[10] Salma WO, Yasir Haya LOM, Binekada IMC, Fistiohady A, Alifariki LO. (2021), Reference Book for Portraits of Coastal Communities; Nutrition & Health Innovation Concept, Deepublish Publisher, IKAPI Member, Yogyakarta

[11] Katoch OR. Determinants of malnutrition among children: A systematic review. Nutrition, 2022 Apr: 96:111565. doi: 10.1016/j.nut.2021.111565.

[12] Andriani H, Friska E, Arsyi M, Sutrisno AE, Waits A, Rahmawati DN. A multilevel analysis of the triple burden of malnutrition in Indonesia: trends and determinants from repeated cross-sectional surveys. 2023; 23:1836. doi: 10.1186/s12889-023-16728-y.

[13] Adibin, Salma WO, Yuniar N. Analysis of the incidence of malnutrition in clowns aged 6-24 months. Obsgin Scientific Journal, 2022; 14(3), 205–214.

[14] Aisnah, Salma WO, Asniah. Weight of toddlers before and after supplementary feeding recovery in North Buton Kupaten. Obsgin Scientific Journal. 2022, Vol.14, No. 4.

[15] Salma WO, Fristiohady A, Binekada IMC, Alifariki LO, Yasir Haya LOM. Covid-19 Era in the Coastal Areas: The Cookies Formulation Gonad of Diadema setosum and its Impacts on Malnutrition During Infection. Current Research in Nutrition and Food Science, 2023; 11(1): pp. 223-230

[16] Salma WO, Fristiohady A, Binekada IMC, Alifariki LO, Yasir Haya LOM. Covid-19 Era in the Coastal Areas: The Cookies Formulation Gonad of Diadema setosum and its Impacts on Malnutrition During Infection. Current Research in Nutrition and Food Science, 2023; 11(1): pp. 223-230

[17] Ministry of Health 2019

[18] Ministry of Health of the Republic of Indonesia. (2021). Technical Guidelines for the Management of Supplementary Feeding for Undernourished Toddlers and Chronically Deficient Pregnant Women. Jakarta: Ministry of Health of the Republic of Indonesia. https://repository.kemkes.go.id/book/92, Available at, 01 January 2022

[19] Hosang KH, Umboh A, Lestari H. Relationship of Supplementary Feeding to Changes in the Nutritional Status of Undernourished Children under five in Manado City. e-Journal e-CliniC (eCl), 2017: Vol. 5 No. 1

[20] Melaku B, Gebremichael B, Negash B, Kitessa M, Kassa O, Dereje J. Kefelegn R, Firdisa D. Time to recovery from moderate acute malnutrition and its predictors among children aged 6–59 months in Fedis Woreda, East Hararghe Zone, Eastern Ethiopia. Front Nutr. 2024; 11:1369419. change: 10.3389/fnut.2024.1369419

[21] Kulkarni B & Mamidi Hospital. Nutrition rehabilitation of children with severe acute malnutrition: Revisiting studies undertaken by the National Institute of Nutrition Indian J Med Res. 2019; 150(2): 139–152