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Effect of Nutrition Education and Supplementary Food on the Weight of Wasting Toddlers in Percut Sei Tuan

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ABSTRACT

The aim of the study was to analyze changes in body weight after an intervention. The research design was a quasi-experimental pre- and post-test with a sample of 40 wasting toddlers divided into a group that received tuna meatballs mixed with moringa leaves supplemented with nutrition education and a group that received nutrition education only for 4 weeks. The test results obtained an average weight gain in the first group was 0.79 kg and in the second group was 0.37 kg. The study conclude that meatballs consumption and nutrition education can increase nutritional intake and weight gain in wasted toddlers.

Keywords: food additives, nutrition education, wastage

INTRODUCTION

According to the 2018 Basic Health Survey (Riskesdas), wasting among toddlers (weight-for-length) in North Sumatra was 13.8%, while according to the 2021 Study of Nutrition Status in Indonesia (SSGI) in Deli Serdang Regency was 9.5%, and according to the ePPGBM application in Percut Sei Tuan District in 2022 was as many as 40 children (MoH RI 2018; MoH RI 2021; Dinas Kesehatan Provinsi Sumatera Utara 2022). The inadequate daily nutrition of children under five years of age for a long time can be met by providing additional food obtained from local food. The World Health Organization (WHO) recommendations, which stipulates that the ideal energy intake is 25 kcal/kg BW/day to achieve a weight gain of 7 g/kg BW/day (UNICEF/WHO/TWB 2012).

Based on secondary data and the results of the initial survey, the researchers wanted to provide additional nutritional food interventions in the form of tuna meatballs mixed with moringa leaves, accompanied by nutrition education for mothers of toddlers, and to see the effect that occurs after the intervention on the weight of wasted toddlers in Percut Sei Tuan District.

METHODS

This study is a quasi-experimental study with a non-randomized pre-test and post-test design, conducted in Percut Sei Tuan District, Deli Serdang Regency from February to March 2023, with two treatment groups, namely the group of intervention with tuna meatballs mixed with moringa leaves accompanied by nutrition education (Group 1) and a group with only nutritional education intervention (Group 2). The sample size was 40 toddlers obtained with the minimum sample size using the Lemeshow formula. The meatball intervention was given every day for 4 weeks while the nutrition education was given once a week.

Body weight was measured before and after the intervention and then the difference was calculated. The knowledge of the mothers of the toddlers was obtained through a questionnaire and the nutritional intake of the toddlers was obtained through a food recall, both were conducted before and after the intervention. The nutrient content of the meatballs was calculated and an organoleptic test was conducted to determine the most preferred meatballs given to the sample.

Data were analyzed using paired sample t-test to determine changes in body weight, knowledge and nutrient intake after the intervention. Meanwhile, the independent samples t-test was used to determine changes in knowledge and body weight between the two groups.

RESULTS AND DISCUSSION

Moringa and mackerel tuna meatballs have undergone organoleptic tests for taste, color, aroma and texture. The results obtained meatball

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formula with a ratio of 600 g of mackerel tuna and 20 g of moringa leaves. Nutrients were calculated and the result was that 60 g of meatballs were sufficient to meet the nutritional intake of toddlers as supplementary food for each toddler per day.

Nutrition education was given four times and the average result was an increase score in group 1 of 2.25 and group 2 of 1.28 with a significance value of 0.179, which means there was no significant difference because both groups received the same intervention, which was nutrition education.

Dietary intake data were obtained by food recall before and after the intervention. Group 1 had an average energy increase of 126.36 kcal, protein 1.26 g, carbohydrate 8.02 g, Fe 0.75 mg, and zinc 0.37 mg, and group 2 had an average energy increase of 46.67 kcal, protein 0.60 g, carbohydrate 4.75 g, Fe 0.23 mg, and zinc 0.10 mg. This shows that the average nutrient increase in group 1 was greater than in group 2 because group 1 received the meatball intervention, while group 2 received only the nutrition education intervention.

An increase in nutrient intake certainly affects the weight of a toddler. The results showed that the average weight gain in group 1 was 0.79 kg and in group 2 was 0.37 kg with a significance value of 0.001 (Table 1), indicating that there was a significant difference in weight gain of the toddlers in the two groups. This increase occurred because of the increased intake of nutrients for toddlers, where group 1 received fish meatballs for 4 weeks and both groups received nutrition education every week, which could increase the knowledge of the mothers of toddlers so that they pay more attention to toddler food consumption. However, nutrition knowledge of mothers did not significantly different between groups (Table 2).

This study is consistent with the study by Lubis *et al.* (2020), which showed that giving sweet potato biscuits and catfish to malnourished toddlers can increase their weight, especially if it is accompanied by nutrition counseling.

Table 1. Differences in toddler weight gain

Difference in weight gain	n	Mean	Standard deviation	p^*
Group 1	20	0.79	0.39	0.001
Group 2	18	0.37	0.26	

*Independent sample t-test; Group 1: Tuna meatballs mixed with moringa leaves accompanied by nutrition education; Group 2: Only nutritional education

Table 2. Differences in mother's knowledge

Difference in knowledge of mothers	n	Mean	Standard deviation	p^*
Group 1	20	2.25	2.48	0.179
Group 2	18	1.28	1.77	

*Independent sample t-test; Group 1: Tuna meatballs mixed with moringa leaves accompanied by nutrition education; Group 2: Only nutritional education

CONCLUSION

The intervention of moringa and mackerel tuna meatballs combined with nutritional education can increase the intake of nutrients and weight of wasted toddlers.

DECLARATION OF CONFLICT OF INTERESTS

The authors have no conflict of interest.

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