

# Effect of Providing Moringa Snacks on Underweight Toddler

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## ARTICLE INFO

### Article history:

Received Nov 16, 2022

Revised Nov 23, 2022

Accepted Dec 14, 2022

### Keywords:

Moringa  
Snacks  
Malnutrition  
Underweight  
Toddlers

## ABSTRACT

Malnutrition could resulted disturbance physique and mental illness and risk death . Moringa oleifera is rich in phytonutrients so that Becomes source promising nutrition \_ however use in fortification food still limited . The research objective was to determine the effect of giving cake snacks dry moringa against enhancement heavy body toddler underweight . Design used is Quasi Experimental with nonrandomized pretest-posttest design. The research sample is 30 toddlers (15 case groups and 15 control groups). Measurement heavy body conducted with digital scales and be measured 2 times ie before intervention and after intervention . Moringa snacks given for 3 weeks Data analysis using the T test. The results of the study showed the provision of cake snacks dry with additions powder Moringa leaves 100 mg per day for 3 week significantly improve heavy body toddler (P=0.00). Moringa can increase the weight of underweight toddlers. Further research is needed regarding the effectiveness of Moringa in overcoming health problems in children in more coverage large including stunting.

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## INTRODUCTION

Malnutrition could resulted disturbance physique and mental illness and risk Dead (Aboagye et al., 2022) which can impact are you serious in the future children and his family as well as Public (Agedew et al., 2022) Until moment this , Problem nutrition is problem health yet capable overcome by countries develop and most potential experienced by group vulnerable , wrong only one toddler . In Indonesia, Prevalence problem nutrition not enough on toddler still experience increase , which is 16.3% on in 2019 to 17% in 2021 especially for underweight case . this show not yet resolved problem nutrition this with optimal . Aceh is one province with prevalence of underweight included in category tall that is reached 23.8 % (Anzano et al., 2021).

UNICEF has provided Ready To Use Therapeutic Foods (RUTFs) to help severe malnutrition and used throughout world , however use in period long , spent expensive cost and not yet of course reach all region with problem nutrition (Choudhury N, Ahmed T, Hossain MI, Islam MM, Sarker SA, 2018).

Factor reason happening malnutrition enough diverse among them use sources of drinking water that are not clean (Aboagye et al., 2022), less nutrition in fetal period and intake nutrition and reason other (Luke et al., 2021). Moringa known throughout world as plant nutritious . whole part Moringa plants, both leaves, skin, roots and seeds general known have many benefit (Estiyani et al., 2017; Liu et al., 2018) Moringa oleifera is rich in vital phytonutrients so Becomes source promising nutrition (Sultana, 2020).

In Southern Ethiopia shows that consumption moringa lower the risk of stunting and wasting on toddler (Agedew et al., 2022) , effective against anemia (Ariyanti R, Febriyanti S, 2022; Loa et al., 2021). On mother puerperal , besides increase milk production , moringa also speed up enhancement hemoglobin (Fitri, 2022). On case malnutrition during Malaria infection , administration moringa increase immunity and help therapy malnutrition during (Pilotos J, 2019). Study on animal try show powder seed moringa have effect antibacterial and comparable antifungalwith the positive control used that is antibiotics streptomycin and ampicillin (Fernandes A, Bances A., 2020).

Despite the many advantages of Moringa oleifera, its use in food fortification is still limited and show different results different . Addition of Moringa leaf powder ( MOLP ) in snacks can contribute to coping problem nutrition in children who are vulnerable to malnutrition (Zungu et al., 2020). Fortified biscuits powder leaf moringa increase heavy body child not enough nutrition (Has & Ariestiningsih, 2020; Mayangsari & Rasmiati, 2020). While research in Northern Benin observed impact gift fortified food with 15 gr of powder moringa for 2 weeks no raise heavy body child in a manner significant (Naga & Jo, 2020). Therefore, this study aims to find out influence providing moringa snacks to toddler underweight .

## RESEARCH METHOD

This research is a quasi experimental research by design nonrandomized pre-post control. Calculation of the number of samples using the formula for the proportion of two populations obtained results of 15 people on group case and 15 people on control group . Total sample is 30 toddlers . Sampling technique using purposive sampling technique with inclusion criteria underweight toddlers, have history normal birth weight, age 24-59 months, in good condition . Exclusion criteria: toddlers with gastrointestinal disorders, experiencing disease certain influences absorption food , experience disease infection certain .

Data collection techniques in the form of data documentation heavy respondent body . The determination of underweight status is based on index heavy body according to age The data collection instrument used is sheet observation heavy body toddler and scales heavy digital body . Research begins with screening initial , followed by data collection on age and medical history. On group case , moringa is given in the form of administration food addition in the form of a dry cake snack containing 100 grams leaf Moringa given in the afternoon for 3 weeks whereas on control group was given food addition in the form of a cake snack dry without addition moringa . Measurement heavy body conducted 2 times ie before and after intervention . Results measurement heavy body then filled into sheet observation . The research was conducted in the working area of the Kuta Health Center Baro Aceh Besar. Data analysis was performed by T-test.

## RESULTS AND DISCUSSIONS

**Table 1.** Analysis Descriptive Heavy Body Not enough Toddler Age 24-59 Years

Group	Pretest					Posttest				
	N	Means	SD	Min	Max	Means	SD	Min	Max	
Experiment	15	7,56	4.01	7,8	11	9,83	1.07	8.0	11,6	
Control	15	7,76	4.09	8,1	11,4	9,61	0.91	8,1	11,4	

Table 1 above show average heavy body before intervention on group experiment was 7.56 kg later go on to 9.83 kg at posttest measurement. Whereas on group control, results measurement heavy body on the pre test showed results an average of 7.76 kg later go on on the post test to 9.61 kg.

**Table 2.** Difference Heavy Body Toddler Age 24-59 Months with Heavy Body Less in the District Area Kuta Baro Aceh Besar

No	Group	Means	SD	SE	Difference in mean (95% CI)	P-Value
1	Experimental group	0.48	0.338	0.087	-0.667 -(-0.293)	0.000
2	Group Control	0.08	0.178	0.046	-0.179 -0.019	0.104

Table 2 show difference heavy body significant on group case with p value 0.000 ( $P < 0.05$ ) mean while difference heavy body on the control group did not significant.

Study this show that average weight body toddler given treatment is 7.56 kg, however occur increase in average weight body toddler to 9.83 kg. Giving food addition (PMT) is alternative for resolve problem nutrition not enough on toddler. Giving Food Additional (PMT) is wrong one form intervention direct for provide type important food for example food addition recovery for toddler nutrition bad and nutrition less. Giving food addition aim for repair circumstances nutrition on child class vulnerable suffering nutrition not enough nutrition, and given with criteria child toddler three times in a row no go on the scales as well as heavy body on KMS lies under line red.

The content of Moringa in the form of vitamin A, B vitamins, vitamin C, calcium and potassium, iron and protein are very easily digested by the human body. The iron content is 25 times higher than spinach (Laikodat et al., 2021). Moringa also contains essential amino acids, proteins, minerals, vitamins, and polyphenols. its phytochemical content moringa that is flavonoids, anthocyanins, anthraquinones, alkaloids, saponins, steroids, isothiocyanates, tannic acid, terpenoids, essential oils (Anzano et al., 2021).

Research on animal with malnutrition show that gift moringa as food addition improve the hematological parameters malnutrition among them cell blood red, cell blood white, haemoglobin. Besides that also increase index function hepar including albumin levels that moringa could becomes source of protein and no cause toxicity liver (Lambe & Bewaji, 2022). Content amino acids and starch proteins moringa which reaches 60% so increase ability channel digestion for absorb nutrition (Baptista et al., 2017).

Happening enhancement heavy body reflect exists influence gift food addition leaf moringa that gives impact to increase heavy body toddlers caused by various content the nutrients. Moringa have good protein, substances iron, vitamin A, calcium and stimulating production immunity cell. These elements synergize so as to increase optimal absorption of nutrients by the intestine and finally result capable increase heavy body toddler with nutrition less.

## CONCLUSION

Providing cake snacks containing dry Moringa 100 mg/day for 3 weeks could increase weight body toddler with heavy body less. Furthermore, further research can be carried out regarding the effectiveness of moringa in overcoming health problems in children more coverage large including stunting.

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