Moringa Oleifera as A Complementary Feeding for Stunting Toddlers

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Abstract: *Moringa Olifera* which is a local plant in Polewali Mandar Regency and is one of the plants that can to accelerate the growth and development of toddlers. In the dried leaves of *Moringa Olifera* found abundant nutritional substances, such as: 10 times vitamin A than carrots, 0.5 times vitamin C than oranges, 17 times calcium than milk, 15 times potassium than bananas, 25 times the substance. Iron versus spinach and 9 times the protein than yogurt. This research is expected to be an alternative for families with stunted children, especially those with low economic status to be able to provide adequate nutritional intake to their toddlers by utilizing local plants/plants, namely *Moringa Olifera*. This research is a type of research using a *Quasi-Experimental* design, namely experiments that have treatment, impact measurement, experimental units but do not use random assignments to create comparisons in order to conclude changes caused by treatment. The design used was one group pre test and post test design, namely a study by comparing the nutritional status of children under five before the intervention and after the intervention. The results showed that the Sig (2-tailed) both variables equal to 0.000. This value is <0.05, so it can be concluded that there is an effect of giving *Moringa Olifera* powder on body weight and height of toddlers. Because of this, giving *Moringa Olifera* powder can increase body weight and height in toddlers
Keywords: *Moringa Leaves*, *Moringa Oleifera*, Toddlers.

Introduction

The nutritional status of toddlers is a reflection of nutritional status, nutritional problems will arise if the intake of nutrients consumed with nutritional needs is not appropriate. Common nutritional problems include malnutrition and malnutrition. Undernutrition occurs when the intake of nutrients is lower than what is needed, while malnutrition occurs when the intake of nutrients is lower. Age under five years is a developmental stage that is susceptible to diseases caused by lack or excess of nutrients (Adiningsih, 2010).

Provision of complementary foods with nutritional adequacy at infancy greatly supports their growth and development. Complementary foods for breastfeeding can be in the form of factory porridge or made by yourself by adding other nutrients. Consumption of complementary foods that have been mixed with micronutrient supplements has been shown to increase the weight and size of the child's body, in addition there are many studies that supplementation can improve children's cognitive development (Allen & Gillespie, 2001).

Moringa Oleifera has been used successfully to treat malnutrition in children. Children showed significant weight gain when consuming *Moringa leaves* added to their diet. Consuming *Moringa Oleifera* leaves is an alternative to tackle malnutrition cases in Indonesia (Jannah & Suwita, 2014). The importance of *Moringa Oleifera* nutrients for linear growth of children, especially those who are still in their infancy, is the basis for researchers to conduct research to determine whether there is an effect of *Moringa Oleifera* (*Moringa*) as complementary breastfeeding for stunting children (Muliawati & Sulistyawati 2019).

West Sulawesi Province, it was noted that the prevalence of stunting nutritional status based on height/age was 48.0% consisting of very short and stunted children, respectively 22.3% and 25.7%. One of the districts in West Sulawesi, namely Polewali Mandar, which ranks second to very short toddlers after Majene district. Mapilli is one of the districts in Polewali Mandar which has a stunting number of 104 children (34.67%). So far, the people of Mapilli District do not know the benefits of *Moringa leaves* for health. The community uses *Moringa leaves* as animal feed and is used as material for bathing people affected by witchcraft or witchcraft. Therefore, people do not use, especially as a complementary food ingredient for breastfeeding (KEMENKES, 2010).

The number of children with stunting nutrition in the Mapilli Community Health Center has increased quite drastically. Of the total 54 children (18.0%) in 2018, there was a significant increase in the following year, namely as many as 104 children (34.67%) (KEMENKES, 2015). This is the reason for the research at this time. The significant increase in the number of stunted children in the Mapilli Community Health Center made researchers interested in conducting research on *Moringa Oleifera* as a complementary food for breastfeeding for children with stunting in the working area of the Mapilli Health Center, Mapilli District, Polewali Mandar Regency to provide references to health workers and mothers of children under five regarding the benefits and effects of *Moringa Oleifera* on the nutritional status of stunting infants (Muliawati & Sulistyawati, 2019).

Methods

This study uses a *Quasi Experiment* design (*Quasi-experimental*) which is an experiment that controls the research situation by using a specific design and/or non-random determination of the subject to get one of the various levels of research. The approach used is the one group pre-test and post-test design, namely a study by comparing the nutritional status of toddlers before and after the intervention.

The independent variable in this study was the provision of *Moringa leaves* to toddlers. *Moringa leaves* were given for 14 days by giving moringa powder as much as 10 grams/day and then repeated anthropometric measurements. The dependent variable in this study is the nutritional status of children under five indicators of Body Mass Index (BMI) according to age (BMI/Age) which will be classified into malnutrition, under nutrition, normal nutrition, risk of over nutrition, overnutrition and obesity.

Result

Based on the research results, the average BMI before treatment was 15.12. Whereas for BMI after treatment an average of 15.17 was obtained.

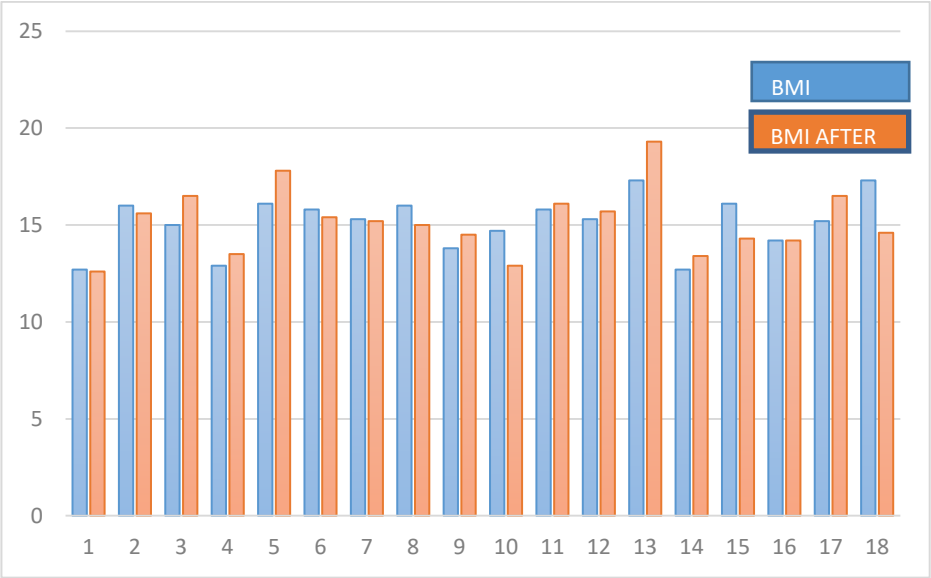

Figure 1. BMI measurement results before and after treatment

Figure 1 shows that in general, the Body Mass Index (BMI) of children under five has increased, namely 9 children (50%), 1 child (5.5%) remained and 8 children (44.4%) decreased.

Table 1. Distribution of nutritional status of children under five based on BMI/U index before and after treatment

Nutritional status	**Before**		**After**	
	n	%	n	%
Severely Wasted	1	5.5	0	0
Wasted	2	11.1	3	16.6
Normal Nutrition	15	83.3	14	77.7
Risk of Over Nutrition	0	0	1	5.5

Table 1. Shows the nutritional status of toddlers before treatment based on the BMI/Age index is that there are 1 toddler (5.5%) with severely wasted status, 2 toddlers with wasted status (11.1%) and 15 toddlers (83.3%) with nutritional status normal. After being given the treatment, there were no toddlers with severely wasted status, 3 toddlers (16.6%) with wasted status, normal nutritional status became 14 toddlers (77.7%) and there was 1 toddler (5.5%) at risk of over nutrition.jThe intervention of *Moringa leaves* appears to provide a positive value for the increase in Body Mass Index (BMI). This is evidenced by a statistically significant difference between the Body Mass Index (BMI) of under-five children before and after being given additional Moringa leaf powder to complementary foods (Complementary feeding).

If the results of the research before and after treatment are correlated, the results are as follows:

Table 2. Correlation Value

Variable	N	Correlation	Sig
BMI Before & After	18	0.679	0.002

Table 2 shows that the correlation value between BMI before and after treatment is 0.679. It can be said that there is an effect of BMI before and after treatment.

Table 3. Results of Paired T-test

Variable	Mean	Sig. (2 - tailed)
BMI Before & After	-0.050	0.869

Discussion

Based on Table 3, it is known that the Sig (2-tailed) of 0.869. This value is > 0.05, so it can be concluded that there is no effect of giving *Moringa leaves* on the nutritional status of toddlers. This is because the increase of children under five BMI before and after treatment is not significant, namely only 0.05.

There have been many studies that say that consumption of food ingredients in supplement form (Supplementation) can improve children's cognitive development. One of the things that can be done to accelerate the growth and development of toddlers is by improving the quality of complementary feeding. One of them is by using local products such as *Moringa Olifera* powder (Purwaningsih, 2011).

This is also supported by research conducted by Muliawati with research results showing that *Moringa Oleifera* extract can increase height by 0.342 cm. However, there is also a slightly different study, in that study, it was found that mackerel dumplings substituted for catfish and *moringa leaves* based on statistical tests had no significant effect on water content, ash content, fat content, carbohydrate content, and energy (Zakaria, 2012). However, it has a significant effect on increasing protein. This seems to indicate that *Moringa Oleifera* when combined with several other food ingredients, the properties of *Moringa Oleifera* may not react optimally to nutritional intake (Yusdarif, 2017).

Conclusions

From the results of the study, it was found that there were differences in nutritional status based on the BMI/Age index before and after giving *Moringa leaves* which were not significant, namely 0.05.Therefore, it is necessary to take persuasive action, namely continuous motivation for cadres and mothers of toddlers to be more active in consuming large amounts of *Moringa leaves*, both in the form of vegetables and in various preparations mixed with Moringa flour to get its benefits.

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