

# The effectiveness of modified dried skimmed milk (MODISCO) to the body weight of under nutrition and malnutrition children

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**Abstract.** The prevalence of undernutrition and malnutrition in Demak 2017 ranked the top 10 nutrients of children in Central Java, namely 2.6% for under nutrition and 1.8% for malnutrition (Demak Health Office, 2017). One of the innovation to fulfill the needs is by giving milk and butter that belongs to MODISCO (Modified Skim Diet and Cotton Sheet Oil). Modisco is a highly nutritious formula, rich in calories and protein consisting of skim milk, sugar and oil or margarine. Modisco has been tested and fulfills special dietary requirements for children in Indonesia so that it can be used to improve nutritional status or gain weight quickly. This research is Quasi Experimental Design with 22 children as sample (11 intervention groups and 11 control groups). The research is done for 15 days. The analysis is by using bivariate analysis with t test. The result of this research is there is a significant increasing in body weight for under nutrition children after modisco applied in Demak with p value 0.014.

## 1. Introduction

Children growth monitoring is very important to minimize the occurrence of under nutrition and malnutrition for children. Malnutrition of children is a pathological condition that arises due to lack of energy and protein, it and is usually associated with the infections determined by measuring the nutritional status of children using body weight index. In Indonesia, the problem of undernutrition and malnutrition can be seen from KMS. Children with undernutrition and malnutrition is a manifestation of lack of protein and energy intake. The food does not fulfill the nutritional adequacy rate and is usually accompanied by the lack of some other nutrients [1].

The prevalence of undernutrition and malnutrition in Demak 2017 got the top 10 rank of nutritional cases of children in Central Java. There are 2.6% for under nutrition and 1.8% for malnutrition [2]. There are three factors that cause children with under nutrition and malnutrition, such as children are not enough to get balanced nutritious food, children do not get adequate nutrition care and children may suffer from infectious diseases. The problem of feeding children is closely related to the mother behavior and the behavior of mothers in choosing food that is not appropriate. The choice of food ingredients and the availability of sufficient food and food diversity are influenced by the level of knowledge of mothers about food and nutrition. The ignorance of the mother can cause food selection errors, especially for children food [3].

The innovation of giving milk and butter is in the form of MODISCO (Modified Dietetic Skim and Cotton Sheet Oil). Modisco is a highly nutritious formula, rich in calories and protein consisting of skim



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milk, sugar and oil or margarine. Modisco has been tested and fulfills special dietary requirements for children in Indonesia so that it can be used to improve nutritional status or increase children's weight quickly [4]. Modisco is one of effort to deal with malnutrition and under nutrition. It can be used as alternative nutrition which can be handled at home. Based on previous study, in Sedo Demak, there are 22 children with underweight body were found. As the result of interviews with parents of children, most parents stated that they obeyed what food that their children want to eat without ensure the nutritious food needs for children. The purpose of this study was to determine the effectiveness of giving butter milk to the underweight body weight for children in Demak, Indonesia.

## 2. Method

This research belongs to *Quasi Eksperimental Design* with *pretest-posttest group with control design*. The population and sample of this study is 22 children. The data is analyzed by using t test. The procedures are before the children are given MODISCO, the first day the children's weight is measured. Then the children (in the experimental group) are given MODISCO III with 1100 cc water (1.5 tbsp skim milk, 1.5 tsp sugar, 0.5 tbsp butter). After 2 weeks, the children's weight is measured. While in the control group at the same time as the treatment is only given milk. The inclusion criteria for children in the intervention group and control group within two weeks had to be in a healthy condition during intervention and measurement.

## 3. Finding

The finding can be seen in table 1. On table 1, it shows that the differences between pre-test and post test in the experimental group after 15 days treatment. In the pre-test, the total of "very thin" category is 2 children (18,2%) and the category of "thin" is 9 children (81,8%). After giving the treatment, it has significant result. It can be seen from the total of "very thin" category becomes 0%. And for the normal category, the total increase in to 36,4%. Based on statistical result, the p value is 0,014.

**Table 1.** Distribution of Respondents Based on Body Weight Differences in the Experimental Group

Body Weight of Children	Pre test		Post test		Z	p value
	n	%	n	%		
Very thin	2	18,2	0	0	-2,449	0,014
Thin	9	81,8	7	63,6		
Normal	0	0	4	36,4		
Total	11	100,0	11	100		

Source: Primary Data, 2019

Based on table 1, it shows that the differences between pre-test and post test in the experimental group after 15 days treatment. In the pre-test, the total of "very thin" category is 2 children (18,2%) and the category of "thin" is 9 children (81,8%). After giving the treatment, it has significant result. It can be seen from the total of "very thin" category becomes 0%. And for the normal category, the total increase in to 36,4%. Based on statistical result, the p value is 0,014.

**Table 2.** Distribution of Respondents Based on Body Weight Differences in the Control Group

Body Weight of Children	Pre test		Post test		Z	p value
	n	%	n	%		

Very Thin	2	18,2	2	18,2		
Thin	9	81,8	8	72,7		
Normal	0	0	1	9,1	-1,000	0,317
Total	11	100,0	11	100		

Source: Primary Data, 2019

Based on table 2, it shows the differences between pre-test and post-test after giving modisco in the control group. Based on data in the pre-test, it shows that the highest category is in the “thin” category 81,8%, and the category “very thin” is 18,2%. Moreover, for the post test data, the category of “very thin” is still same. Thank is 18,2%. And the improvement category into “normal category” is only 9,1% (1 children). Furthermore, the p value of the differences between pre-test and post-test is 0,317.

#### 4. DISCUSSION

Based on the result of this research in the control and experimental group, most of the children are in the “thin” category before given milk and butter as MODISCO (Modified Dried Skimmed Milk). Body weight illustrates the balance between nutrient intake and the use of these nutrients in the body. Adequacy of nutrient intake derived from food consumed daily and the presence of disease will directly affect the person's body weight. Nutritional intake that is not sufficient and needs an infectious disease is a direct cause of malnutrition in children. This has an impact not only on the lack of macro nutrients but also micronutrients that are very necessary for body growth (Soehardjo, 2015).

Factors that cause children in the malnutrition and under nutrition from interviews include inappropriate nutritional intake between those consumed by children. The nutritional intake is indirectly affected by parenting patterns often suffered by mothers and children suffer from infectious diseases (ARI) while other factors are due to maternal behavior in parenting. The problem of feeding children is closely related to maternal behavior, judging from the wrong habits of the mother's behavior towards good lack of feeding to her child. Malnutrition in children can also be caused by the behavior of mothers in choosing food that is not appropriate. The choice of food ingredients and the availability of sufficient food and food diversity are influenced by the level of knowledge of mothers about food and nutrition. This is based on the results of the initial interview, where most parents stated that they obeyed what the child wanted to eat without knowing about nutritious food needs for children

Then, for the posttest result in the control group, the children who belong to “thin” are 63,6%. The experimental group, the children who belong to “thin” are 72,7%. Giving supplementary foods MODISCO (Modified Dried Skimmed Milk ) is food that contains nutrients needed by the body. Giving MODISCO can increase weight in children if the administration of Modisco is accompanied by the fulfillment of nutrition or nutrients in the family. Children who were given MODISCO did not experience weight changes due to the nutritional intake given other than MODISCO which did not fulfill the nutrients. Therefore the nutrients given through MODISCO functioned as repairing body cells and did not have excess energy stored in the form of fat. Changes in body weight occur if the intake of nutrients consumed every day is sufficient for energy formation and has an excess. So the excess energy produced is stored in the form of fat. Lack of intake of nutrients causes energy reserves to be used as energy to explore with the world. So if these conditions continue to have an impact on weight loss in children.

This research is also supported by research conducted by De Pee S & Bloem MW (2013). It shows that children who experience malnutrition are given foods that are rich in fat from milk, butter, soybeans, high-quality vegetable oil can significantly increase the weight. According to Kathryn Dewey & Mary

Arimond (2012), shows that children under five who experience malnutrition, are expected in the family to provide additional food that has a high-fat nutritional component.

All respondents actually had an increase in body weight, between 4 - 6 grams only after Z was added to the weight of the respondents who were originally bad categories to be thin and thin to normal.

## 5. Conclusion

Based on the research, it can be concluded 1) there is an effect of giving milk and butter to body weight in children with less weight in Demak with p value  $0.014 < \alpha 0.05$ , 2) Research can be done again by controlling other factors that affect body weight such as giving other foods, when giving formulas, child activities and so forth.

## References

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