



EFFECTIVENESS OF EDAMTIKA FORMULA TO INCREASE BODY WEIGHT IN ADOLESCENTS

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Abstract. Under nutrition in adolescent have reach ranges from 30% - 40%. Nutritional status influenced by eating patterns, namely food limitations or self- limiting eating. Adolescence is a period of growth and maturation of reproduction. Growth causes physical changes that affect the needs and adequacy of nutrient intake. An imbalance between needs and adequacy will have an impact on the problem of over nutrition and under nutrition. EDAMTIKA formula has the main ingredient of edamame, as a source of vegetable protein food, more protein content than other plant foods. EDAMTIKA formula helping young women improve their nutritional status. This pre experimental study aim to identify increasing of weight in female students.. The sample were treath by EDAMTIKA formula twice a day for a week. The average of weight enhancement of 1171 grams/ week. *Wilcoxon signed ranks test* show there is increasing of body weight after intervention ($p= 0.000$). However female students need consider an adequate food intake in order to up weight.

PRELIMINARY

This research is a continuation of a study entitled the use of edamame soybean (*glycine max* (l merril) as a modification of a high calorie enteral formula. EDAMTIKA formula has the main ingredient in the form of edamame which is a food source of vegetable protein which has more protein content than other types of plant foods. Edamame is a potential functional food because it contains bioactive components including bioactive peptides, omega-3 fatty acids, isoflavones, sterols, and saponins, as well as high dietary fiber content in edamame soybeans which are proven to reduce LDL cholesterol (Muaris, 2013¹; Winarti, 2010²).

Along with the increasing population of adolescents in Indonesia, adolescent nutrition problems need special attention because they affect the growth and development of the body and its impact on adult nutrition problems. Teenagers have their own views about his body (Body image) which is often wrong. Most of the young women have the desire to have an ideal body and to get that dream, usually many teenage girls who go on a strict diet and cause adolescents to get less balanced and nutritious food, consume medicinal drinks or slimming drugs, drink herbal medicine and so on. These efforts can result in a decrease in nutritional status if not done properly. Where the intake of energy and nutrients is less than the recommended number of nutritional adequacy (Supariasa dkk., 2002³).

Poor or underweight nutritional status can result in a decrease in adolescent girl's weight. Body weight is one of the most used body mass parameters that can reflect the amount of some nutrients such as protein, fat, water and minerals. The consequences that occur when nutritional deficiencies include decreased immunity (susceptible to infectious diseases), disruption in the process of growth and development, lack of energy that can reduce labor productivity, and the difficulty of someone in receiving education and knowledge about nutrition (Almatsier, 2001⁴).

MATERIALS AND METHODS

This study used a *pre experimental with pretest-posttest design*. There are 100 populations in the Annuriyyah Kaliwining Islamic Boarding School Jember. To select a homogeneous sample, inclusion

criteria were set including: female students aged 13-15 years old, thin and very thin categories of nutritional status, willing to be respondents and like milk. So that the target population is known to be 28 people. Samples were taken randomly using the finith formula. And found 27 samples. At the beginning, the initial weight measurements were taken, then respondents received treatment of an EDAMTIKA enteral formula twice a day for one week, this formula was taken every morning and night. At the end of the treatment the respondent's body weight was measured. This research instrument used to determine respondent body weight is a digital bathroom scale and weight note paper. The average increasing of respondent's weight reach 1171 grams/week. Normality test results showed the data not normally distributed. Data analysis using *wilcoxon signed ranks test*, using alpha 5%.

RESULTS

Sample size of this study were 27 respondents. The result explained about descriptive analytic and efectiveness of EDAMTIKA formula to increase adolescents weight. Descriptive test includes pre and post body weight. While the bivariate test determined the effectiveness of weight before and after treatment. Using *wilcoxon signed ranks test*.

1. Descriptive Analysis

Table 1. Description of Pre and Post Intervention Young Women Body Weight in Annuriyyah Islamic Boarding School Kaliwining Jember.

Body Weight Measurement	N	Mean (kg)	Median (kg)	Standard Deviation	Minimum (kg)	Maximum (kg)
Pre	27	39.748	39.500	5.1618	29.1	49.8
Post	27	40.919	41.100	5.3514	29.3	52.6
Difference	-	1.171	1.6	0,1896	0.2	2.8

The results of weight measurements in table 1 showed the average post-intervention weight was higher than the pre-intervention (40,919> 39,748). The average difference of body weight was 1,171 kg (1171 grams). Likewise, the median value, standard deviation and minimum body weight have increased. The highest body weight in adolescent girls before treatment reached 49.8 kg increased by 2.9 kg to 52.6 kg.

2. Bivariate Analysis

Normality test before bivariate analysis was done, pre and post intervention data were found abnormal. Then the statistical test used is a non-parametric difference test that is Wilcoxon signed ranks test with alpha 0.05. Then the statistical test used is a non-parametric difference test that is Wilcoxon signed ranks test with alpha 0.05.

Table 2. Difference of Adolescents Body Weight Before and After Intervention in Annuriyyah Islamic Boarding School Kaliwining Jember

Body Weight	Z	p-value
EksperimenPost – EksperimenPre	- 4.243	.000

Wilcoxon signed ranks test showed a significance value of 0.000, smaller than alpha 0.05. So there are differences of adolescent body weight before and after the intervention. It means the

EDAMTIKA formula is effective to increase adolescents body weight in the Annuriyyah Islamic Boarding School Kaliwining Jember.

DISCUSSION

The results from this research are increase body weight occurred at the post intervention, one week after given the EDAMTIKA formula, that was because of high energy from the EDAMTIKA formula, but the fiber can be reduce LDL levels, so that content of edamame can be increase body weight but stay healthy because the fiber contained in edamame can reduce cholesterol (*Low density Lipoprotein*) (Muaris, 2013¹; Winarti, 2010²).

EDAMTIKA formula is a non-commercial enteral formula which has a nutritional value per 100 g, namely energy 465.53 kcal, protein 38.50 g, fat 19.57 g, carbohydrate 33.85 g, fiber 3.27 g and also has a high antioxidant content which is around 37.5% so that it strengthen body immunity. From the results of laboratory tests also found that the value of lactose levels is very low average of 12.43%. so for young women who are intolerant of lactose can still consume this EDAMTIKA formula.

Statistical analysis using Wilcoxon signed ranks test got the result there was a difference body weight between before and after intervention women adolescent. While of the intervention women adolescent is given edamtica formula 2 times a day, they has supervision from the *santriwati* coordinator who has received an explanation, this intervention is carried out one week at the same time by monitoring body weight, and observing the situation of adolescent during the intervention.

The average difference of body weight was 1,171 kg (1171 grams), it is an significant increasing. When compared with other soy-based food products, such as the research of Mariyam et al (2017⁵) which provides soybean nuggets as much as 200 grams for ages 1-3 years and 300 grams for ages 4-5 years. Which aims to increase the weight of malnourished children under five, where the average increase in body weight reaches 0.19 kilograms.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion there are differences in adolescent body weight before and after the intervention significance of p-value 0.000, smaller than alpha 0.05. So there are differences in adolescent body weight before and after the intervention. This means that the administration of edamtika formula is effective in increasing the weight of young women at the Annuriyyah Islamic Boarding School Kaliwining Jember Based on the conclusion above, young women especially female students to pay attention to their eating consumption patterns, although for young women who experience poor nutritional status have experienced weight gain, But it is not enough for young women to only consume the EDAMTIKA formula because the EDAMTIKA formula is only consumed for a snack which is given 1 day for 2 times. Future studies need to make EDAMTIKA formulas with various flavors.

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