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Giving Red Rice Tain Water Against Weight Lossing in Children with Obesity

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Abstract— Background: Obesity is a pathological condition where there is an excessive or abnormal accumulation of body fat from what is needed for normal bodily functions. Being overweight is a normal weight. It has a high advantage compared to excess fat. **Method:** This study used a quasi-experimental pre-post test design with a control group design. The population in this study was first-grade elementary school children in Menteng Palangka Raya IV SDN. The sampling technique uses simple random sampling, with a sample of 32 respondents in the preparation group and 66 respondents in the control group. Data analysis uses a normality test and homogeneity test. **Results**: The results of the statistical test obtained no difference in the student body between the control group and complexity (p> 0.05), the difference in substance was 2.449 kg, the interval of 95% difference was 2.03 kg - 2.45 kg. **Conclusion:**The difference was 2,449 kg. However, statically, there was no significant difference in student body weight between the control and setting groups.

Keywords: Red Rice Tajin Water, Body Weight, Childhood Obesity.

INTRODUCTION

Obesity is a pathological condition in which there is an accumulation of excess or abnormal body fat necessary for normal body function. Overweight is a condition where body weight exceeds the normal body weight. Overweight has a high risk of obesity. According to the Centers for Disease Control and Prevention (CDC), obesity can also be referred to as "extreme overweight."[1] Obesity and overweight cases have become endemic problems throughout the world. Over the previous three decades, the prevalence of obesity and overweight in children has rapidly increased worldwide. It is closely related to socioeconomic changes, nutrition-related to sugary foods consumption, low fiber, and sugary drinks. The prevalence of obesity in developed countries such as the United States has dramatically increased by 17% in adults, children, and adolescents. According to Riskesdas 2010, the prevalence of obesity in Indonesia is 9.2%, while in Central Kalimantan, the prevalence of obesity for ages 6-12 years is 7.1%. Obesity in childhood and adolescence is associated with obesity in adults. About 30% of women and 10% of men have a risk of obesity in adulthood.[2] Husaini's research results cited by Hadi (2005) suggest that, of the 50 children over nutrition, 86% will remain obese until adulthood, and of the 50 obese girls, 80% will remain obese into adulthood.[3]

Many efforts have been made to lose weight, but an effective way is to improve diet or a balanced diet to burn fat. Controlled control by reducing glucose intake, one of which is in rice. Currently, brown rice has lower glucose levels than white rice, but in consuming brown rice, the taste is not as good as white rice, and sometimes children do not like to consume brown rice.[9]

Tajin is boiled brown rice water and can be used as a substitute for milk. Tajin derived from brown rice contains ten types of enzymes. And it also contains more antioxidants, vitamins B and E than starchy water from white rice. Also, starch water can help treat diabetes and high blood pressure. It also helps produce antibodies that maintain immunity or immunity in the body.

According to a study entitled Body Mass Index for Obesity Patients Before and After Consuming Rice Bran (Rice Bran Age 20-30 Years in Sekaran Village, Gunungpati District, Semarang City, 2009) ", Thesis of the Department of Public Health, Nikmatul Chasanah with the results of the research and discussion. It was concluded that there were differences in BMI of obese patients before and after consuming bran for one month. It can be seen from the decrease in the average BMI of 0.82 kg / m2 with a value of p = 0.001 (p <0.05). From the data above, the researcher is interested in researching the modification of dietary consumption of red rice starch for weight loss in obese children at SDN IV Menteng, Palangka Raya.[4]

Research on Obesity in Elementary School Children by Ayu Aprilia shows a relationship between physical activity and obesity in children. Children who do not regularly exercise have a risk of obesity by 1.35 times compared to regular exercise respondents.[5]

Based on the description above, the authors are interested in researching giving red rice starch to weight loss in obese children.

METHOD

This study used a quasi-experimental pre-post test research design with a control group design. The experimental design in this study was a pre-posttest with a control-group design. This design classifies the sample into two groups, namely, the experimental group and the control group. This research was conducted at SDN IV Menteng Palangka Raya and was carried out from February to July 2017. Population in the research of all first-grade elementary school children at SDN IV Menteng Palangka Raya. A sample of 32 child respondents in the intervention group and 66 child respondents in the control group. Children age range six years - 12 years, children at that age are in grade I - VI Elementary School. The sampling technique used simple random sampling using a lottery on SDN IV Menteng students who were obese until the number was met. Univariate data processing was carried out early to find the mean, median, mode, standard deviation, maximum value, and minimum value. Bivariate data processing was performed by analyzing the normality test and homogeneity test. Furthermore, hypothesis testing is carried out using the difference between two means, namely the T-test.

RESULTS

1. Univariate Analysis

The research results are presented based on the results of univariate analysis, including:

Table 1 Characteristics of Children Based on Gender in the Treatment and Control Group in 2017

Variable	Intervention Group		Control Group	
	n	%	n	%
Gender				
Male	20	62,5	41	62,1
Female	12	37,5	25	37,9

Based on Table 1, the respondents were mostly male students in each intervention group and the control group. In the intervention group, 62.5% of male respondents and 62.1% of male respondents in the control group.

Table 2 Characteristics of Children Based on Height in the Treatment and Control Group in 2020

Group	n	Min – Max	Mean	SD	95% CI Mean
Control	66	110-162	134,35	12,1	131,36-137,34
Intervention	32	131-158	142,19	7,79	139,38-145

Based on Table 2, of the 66 student respondents in the control group, the average height was 134.35 cm, with the lowest height of 110 cm and the highest height of 162 cm, with a standard deviation of 12.1. Using 95% confidence degrees, the researchers believed that the students' height in the population not given starch water and brown rice (control group) was between 131.36 cm - 137.34 cm.

Of the 32 student respondents in the intervention group, the average height was 142.19 cm, with the lowest value of 131 cm and the highest 158 cm, the standard deviation was 7.79. Using 95% confidence degrees, the researchers believed that the students' height in the population treated with starch water and brown rice (intervention group) was between 139.38 cm -145 cm.

Table 3 Overview of Changes in Child Weight in Control and Intervention Groups

Group	n	Min – Max	Mean	SD	95% CI Mean
Day 1					
Control	66	24 - 69	44,35	9,46	42,02 – 26,68
Intervention	32	34 – 68	47	9,14	43,7 – 50,3
Day 4					
Control	66	26-69	44,3	9,66	41,93 - 46,68
Intervention	32	34-67	46,97	8,97	43,73 - 50,21
Day 9					
Control	66	26-69	44,36	9,42	42,03 - 46,7
Intervention	32	33 - 67	46,81	9,26	43,47 – 50,15

On day 1, the students' body weight (BW) in the control group (not given the intervention of starch water and brown rice) had the lowest weight of 24 kg and the highest weight of 69 kg. The mean weight of the control group was 44.35 kg, with a standard deviation of 9.46 kg. Using a 95% degree of confidence, the researchers believe that the population's body weight without starch water and brown rice is between 42.02 kg - 26.68 kg.

Student body weight (BW) in the intervention group (given starch water and brown rice), the lowest BW was 34 kg, and the highest BW was 68 kg. The intervention group's average body weight was 47 kg, with a standard deviation of 9.14 kg. Using a 95% confidence level, the researchers believed that the body weight in the intervention group population but had not been given the intervention was between 43.7 kg - 50.3 kg

On day 4, the students' body weight (BW) in the control group (not given the intervention of starch water and brown rice) had the lowest weight of 26 kg and the highest weight of 69 kg. The mean weight of the control group was 44.3 kg, with a standard deviation of 9.66 kg. Using a 95% degree of confidence, the researchers believe that the bodyweight in the population not given starch water and brown rice on day four was between 41.93 kg - 46.68 kg.

Student body weight (BW) in the intervention group (given starch water and brown rice on day 4), the lowest weight was 34 kg, and the highest weight was 67 kg. The mean weight of the intervention group was 46.97 kg, with a standard deviation of 8.97 kg. Using the 95% confidence level, the researchers believed that the intervention group population's body weight on day 4 was between 43.73 kg - 50.21 kg.

On the 9th day, the students' body weight (BW) in the control group (not given starch water and brown rice) had the lowest weight of 26 kg and the highest weight of 69 kg. The mean weight of the control group was 44.36 kg, with a standard deviation of 9.42 kg. Using a 95% confidence degree, the researchers believed that the BW in the population treated with starch water and brown rice on day 9 was between 42.03 kg - 46.7 kg.

The body weight (BW) of students in the intervention group (given starch water and brown rice on the 9th day), the lowest weight was 33 kg, and the highest weight was 67 kg. The mean weight of the intervention group was 46.81 kg, with a standard deviation of 9.26 kg. Using the 95% confidence level, the researchers believed that the intervention group population's body weight at day 9 was between 43.47 kg - 50.15 kg.

2. Bivariate Analysis

The research results are presented based on the results of the bivariate analysis, including:

Table 4 Relationship between Gender and Final Weight Measurement

Characteristics	Group (n)	Mean BB (95% CI)	SD	Levene Test	Difference	*p-Value*
Gender	Male (61)	46,80	9,99	0,761	0,03	*0,992*
	Female (37)	46,83	8,34			

The bivariable analysis of the relationship between gender and student body weight was based on table 4, showing no difference in the average body weight between men and women (P value> 0.05).

Table 5 Relationship between Height and Final Weight Measurement

Variable	R	R^2	Line Equations	*p-Value*
Height	0,872	0,761	BW students = 84,79 + 1,11 * (Height)	0,005

The relationship between student height and weight showed a strong relationship (r = 0.872) and a positive pattern, meaning that the higher the body, the greater the body weight. The coefficient of determination is 0.761. The regression line equation obtained can explain 76.1% of the bodyweight variation, or the line equation obtained is good enough to explain the weight variable. The statistical test results found a significant relationship between students' height and weight (p = 0.005).

Table 6 Analysis of the Effect of Giving Red Rice and Brown Rice Tajin Water to the Difference in Child Weight in the Control &Intervention group

	Mean BB (95% CI)	SD	Levene Test	Difference	*P Value*
Child Weight Control Group (n=66)	44,36 (42,03 - 46,7)	9,49	0,876	2,449 (2,03 – 2,45)	0,231
Child Weight Intervention Group (n=32)	46,81 (43,47 – 50,15)	9,26			

The control group's mean body weight was 44.36 kg; 95% CI 42.03 kg - 46.7 kg. The mean body weight in the intervention group was 46.81 kg; 95% CI 43.47 kg - 50.15 kg. The statistical test results showed no difference in student body weight between the control and intervention groups (p> 0.05). Still,there was a difference of 2.449 kg in substance, 95% of the difference between the interval was 2.03 kg - 2.45 kg.

DISCUSSION

The respondents were mostly male students based on the research results, each intervention group, and the control group. In the intervention group, 62.5% of male respondents and 62.1% of male respondents in the control group. A study by Sartika (2011) states that boys have a risk of obesity by 1.4 times than girls. It is probably because girls often restrict eating for appearance reasons.[6]

On day 1, the students' body weight (BW) in the control group (not given starch water and brown rice), the lowest weight was 24 kg, and the highest weight was 69 kg. The mean weight of the control group was 44.35 kg, with a standard deviation of 9.46 kg. Using a 95% degree of confidence, the researchers believed that the body weight in the population that was not treated with starch water and brown rice was between 42.02 kg - 26.68 kg. Student body weight (BW) in the intervention group (given starch water and brown rice), the lowest BW was 34 kg, and the highest BW was 68 kg. The mean BW in the intervention group was 47 kg, with a standard deviation of 9.14 kg. Using a 95% confidence level, the researchers believed that the intervention group population's body weight but had not been given the intervention was between 43.7 kg - 50.3 kg. On day 4, the students' body weight (BW) in the control group (not given starch water and brown rice), the lowest weight was 26 kg, and the highest weight was 69 kg. The mean weight of the control group was 44.3 kg, with a standard deviation of 9.66 kg. Using a 95% degree of confidence, the researchers believed that the body weight in the population that was not intervened with starch water and brown rice on day 4 was between 41.93 kg - 46.68 kg. Student body weight (BW) in the intervention group (given starch water and brown rice on day 4), the lowest weight was 34 kg, and the highest weight was 67 kg. The mean weight of the intervention group was 46.97 kg, with a standard deviation of 8.97 kg. Using the 95% confidence level, the researchers believed that the intervention group population's body weight at day 4 was between 43.73 kg - 50.21 kg. On the 9th day, the students' body weight (BW) in the control group (not given starch water and brown rice), the lowest weight was 26 kg, and the highest weight was 69 kg. The mean weight of the control group was 44.36 kg, with a standard deviation of 9.42 kg. Using a 95% confidence degree, the researchers believed that the BW in the population treated with starch water and brown rice on day 9 was between 42.03 kg - 46.7 kg. Student body weight (BW) in the intervention group (given starch water and brown rice on the 9th day), the lowest weight was 33 kg, and the highest weight was 67 kg. The mean weight of the intervention group was 46.81 kg, with a standard deviation of 9.26 kg. Using the 95% confidence level, the researchers believed that the intervention group population's body weight at day 9 was between 43.47 kg - 50.15 kg.

In a study by Sartika (2011), another factor causing obesity is the lack of physical activity, daily activities, and structured physical exercise. The physical activity carried out from childhood to older adultswill affect health throughout life. Obesity in childhood will increase the risk of obesity in adulthood. The causes of obesity are classified as multicultural and multidimensional because they occur in various socioeconomic circles.Environmental factors, rather than genetic factors, influence obesity. If obesity occurs in children before the age of 5-7 years, then the risk of obesity can occur when growing up. Obese children usually come from families who are also obese.[6,10]

The control group's mean body weight was 44.36 kg; 95% CI 42.03kg - 46.7kg. The mean body weight in the intervention group was 46.81 kg; 95% CI 43.47kg - 50.15kg. The statistical test results showed no difference in student body weight between the control and intervention groups (p> 0.05). Still,there was a difference of 2.449kg in substance, 95% of the difference between the interval was 2.03kg - 2.45kg.

In a study conducted by Silvia (2009), drink based on red rice starch water still has shortcomings, namely low calcium and protein content. The calcium content in white rice starch water is still low; namely, 1.96 mg / 100ml compared to the daily calcium intake requirement of 1000 mg/day.[7]

According to research by Fatimah (2007), the protein content of red rice starch water is still low, namely 0.2536%, not sufficient daily protein, namely 65 g / day. Drinking red rice starch water needs to be substituted with high calcium and protein content with high calcium and protein content if mixed with brown rice starch water.[8]

CONCLUSION

There is no difference in student body weight between the control and intervention groups (p> 0.05), but the difference means was 2.449kg in substance; 95% of the interval is 2.03kg - 2.45kg.

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