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## Overweight Handbook Increases Physical Activity of Students at Frater Junior High School, Kendari

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**Abstract.** The prevalence of overweight in adolescence at junior high (SMP) school Frater was 14.1% (exceeded the standard of the nutritional problem for 10%), and thus requires innovation in form of a handbook to overcome the obesity problem. This study aimed to know the effect of the overweight handbook on the physical activity in adolescents at SMP Frater Kendari. This was a quantitative study (pre-experimental study) with a pre-test post-test study design that was done from 7 May-14 July 2018. The population of the study was all students with overweight status at SMP as many as 38 people and the samples were 32 students that were selected through a simple random sampling. The physical activity level was assessed using IPAQ for 4 times and analyzed using the Wilcoxon sign rank test. The results of the study showed that the average METs score of the activity level in pre-measurement was 280 METs per week and the post-measurement 669 METs per week. Meanwhile, the result of the paired t-test on physical activity showed p value  $(0.000) < \alpha (0.05)$ . This present study concludes that there is an effect of the overweight handbook to the increase on physical activity level of the adolescents. It is suggested to the overweight student at SMP Frater to read the handbook regularly and increase their activity level by exercising at least 30 minutes for 2-3 times per week and to the school party, to educate the student routinely about overweight using the handbook.

## INTRODUCTIONS

Overweight is a global health problem that can be due to a lack of physical activity (1). Obesity is a condition when body weight exceeds the normal standard and causes health problems for the sufferer (2). The negative impacts of obesity are metabolic disorders and increased risk of degenerative diseases such as type 2 diabetes mellitus, ischemic stroke, and coronary heart attack. (3)

World Health Organization (WHO) stated that overweight people aged over 15 years

around 1.6 billion people and obese people as many as 400 million people. Out of 10 (ten) children, 1 person is overweight, and an increase in cases of obesity in children and adolescents is in line with an increase in cases of obesity in adults (4).

Indonesia is ranked 10th in the list of countries with the highest levels of overweight in the world, as many as 40 million adults who are overweight. Based on data from the Basic Health Research (Riskesdas) in 2013 as many as 18.8% of children aged 5-12 years

overweight and 10.8% suffered from obesity, besides the prevalence of obese adolescents aged 13-15 years in Indonesia by 10.8% consisting of 8.3% overweight and 2.5% obese (5). This is still below the standard indicator of nutritional problems, especially fat which is 5% (3).

Overweight examination results in Southeast Sulawesi in 2015 among people aged 15 years and over who visited the public health centers were 33.67% overweight (6), while data obtained from the Health Office of Kendari in 2015 found 17.05% were obese and experienced an increase of 29.27% in 2016 (7).

Factor associated with overweight such as environmental factors for example lack of physical activity (8). In developing countries, factor affecting the high prevalence of overweight is a lifestyle (9). Based on this reason, adolescents are categorized into the high-risk group for overweight (10). A study by Deysy showed that physical activity associated with the prevalence of overweight (11)

Prevention of obesity early on in the group of adolescents can be easily done than overcoming obesity in the adult age group, this is because efforts to change lifestyles and lose weight in someone who is obese are more difficult than preventing early on when they are still teenagers. Prevention of overnutrition in adolescents can be done by providing health education that is conveying information related to how to lose weight and regulate eating behavior and monitor adolescent body weight (12).

One of the health education efforts can be done to prevent and overcome overweight is education using handbook about nutritional status measurement in adolescent including information on definition, causes, impact, and how to prevent overweight as well as information on how to measure nutritional status so that adolescents can understand their nutritional status and make it as a guide to prevent overweight.

A study by Mahdali showed that nutrition education can increase knowledge, attitude and breakfast habit in adolescents who are overweight (13), furthermore, a study by Wulandari and Prameswari (2017) also showed an effect of nutrition education using comics is increasing (14). The nutrition education using

various media has been done however, handbook media use is limited.

Based on the results of a preliminary study in Junior High Schools in Kendari, it can be seen that visually the incidence of overweight as Frater Junior High is more common than in other schools. Based on the results of the screening of all students at the Frater Junior High School, it can be seen that from 270 students, there were 38 students (14.1%) whose nutritional status was over, namely 17 people (44.7%) who were obese and 21 people (55.26%) were overweight, then there were 10 thin people (3.7%) and 222 people (82.2%) with normal category (15). These data show that nutritional problems, especially overweight at Frater Junior High School have exceeded the standard of 10% so that innovation is needed to overcome overweight. Besides that, Frater Junior High School also has a school health organization (UKS) that deals with health problems for students, but UKS officers did not understand how to assess nutritional status and efforts to prevent overweight in the form of counseling using media handbooks.

Based on this phenomenon, it is important to conduct a study to know the effect of the overweight handbook on the physical activity of adolescent, therefore the hypothesis of this present study was the overweight handbook can increase the physical activity of students at SMP Frater Kendari.

## **METHODS**

This study was a pre-experimental study with one group pre-test post-test design when measurement made twice, one before treatment (pre-test) and the other one was made after treatment (post-test). This study was conducted from May 7th – July 14th. The population of the study was all students who were overweight at SMP Frater Kendari as many as 38 students, and 32 of them were selected as samples through a simple random sampling technique.

The physical activity measured in this present study was the amount of energy spent by the body each minute within a week. The physical activity was measured using the International Physical Activity Questionnaire (IPAQ), with objective criteria measured in

METs/week (16). The physical activity measures 4 times, namely pre-test, followed by the 2<sup>nd</sup>, 3<sup>rd</sup> and post-test measurements.

The data were analyzed descriptively to show the physical activity change over weeks and inferentially using the Wilcoxon sign rank test.

## RESULTS AND DISCUSSIONS

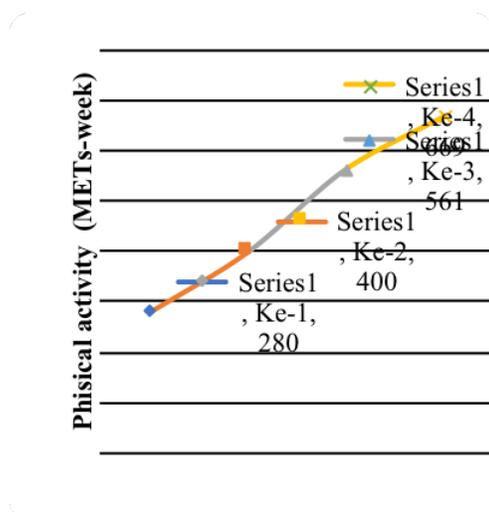
### 1. Characteristics of Respondents

Table 1. Distribution of respondent's characteristics at SMP Frater Kendari in 2018

Characteristics	n (32)	%
<b>Age</b>		
14	12	37.5
15	17	53.1
16	3	9.4
<b>Sex</b>	<b>n</b>	<b>%</b>
Male	17	53.1
Female	15	46.9
<b>Class</b>	<b>n</b>	<b>%</b>
VII	19	59.4
VIII	13	40.6

Table 1 describes that among 31 respondents, most of them aged 15 years old (53.1%), women (46.9%), and were at the grade (59.4%).

### 2. Physical Activity



Graphic 1. Distribution of respondents based on physical activity SMP Frater Kendari year 2018

Graphic 1 shows an increase of physical activity in the overweight adolescents at SMP Frater Kendari, the average METs score of physical activity at the first measurement was 280 METs per week, then increased to 400 METs at the second measurement, 561 METs at the third measurement, and 660 METS per week at the fourth measurement.

### 3. The result of the Wilcoxon sign rank test

Table 2. Wilcoxon sign rank test result

Time Measurement	n	mean	P value
Pre Test	32	280	0.000*
Post Test	32	669	

\* p-value of Wilcoxon sign rank test mean difference 389

Table 2 shows the mean of physical activity of adolescents before receiving the overweight handbook was 280 METs per week and became 669 METs per week after receiving the handbook. The mean of physical activity increase was 389 METs per week.

The result of the Wilcoxon sign rank test showed p value  $0.000 < \alpha (0.05)$  means that the overweight handbook affected the increase of physical activity in adolescents at SMP Frater Kendari.

The result of the study showed the mean of METs score increased over time of measurement. The mean physical activity level before receiving the overweight handbook was 280 METs per week and became 669 METs per week after receiving the handbook. The physical activities exercised by male adolescents were very intense such as playing basketball, cycling, and swimming, while the female adolescents did moderate exercises which are mostly done at home such as cooking, washing, moping. These physical activities were done 3-4 times per week with a duration of approximately 30 minutes.

The result of the Wilcoxon sign rank test concluded that the overweight handbook can increase the physical activity of adolescents at SMP Frater Kendari that can be seen form an increase in their physical exercise. This condition was due to the role of overweight

handbook and also their motivations to increase their activity level after understanding that overweight can be decreased by doing more exercise or house chores with a duration of more than 10 minutes or frequent every day. This study did not change adolescent's behavior at SMP Frater but rather change their action in doing physical exercises that were done during the study period. The change of student's physical activity is also supported by the monitoring process to control the frequency of physical activity by giving a motivation to do regular exercise daily.

This present study is in line with a study by Siahaan et al, that found physical activity differences between overweight and normal nutritional status group (17). Furthermore, a previous study by Kartika also found a significant difference of physical activity between obese and non-obese people (18). The obesity in adolescents is due to food habit which consumes a high amount of food, lack of physical activity while physical activity burns calories therefore the more active, the higher the energy burnt (19).

A study by Lanita et al. in 2015 showed that high-intensity exercise is potential media that is effective and economical to burn fat people who are overweight. Therefore, adolescents are suggested to do intense exercises and useful and healthy physical activities, such as tidying the bedroom, walking, sweeping and mopping as well as doing healthy exercises such as playing football, basketball, badminton, cycling, and jogging (20).

This study is also supported by the result of the National Health Survey (Riskesdas) that found the major factors of overweight are lack of physical activity, lifestyles change, food habit that tends to eat food with high fat and less fiber (5). This present study is also in line with a study by Rostania at Elementary school Sudirman 1 which aimed to know the effect of nutrition education on knowledge and sedentary lifestyles in obese children and found significant differences comparing before and after receiving nutrition education with  $p=0.001$  (21). Besides, a study by Podojoyo et al that has been conducted on 46 samples by giving intervention in form of nutrition counseling studying indicator of body weight showed significant difference in body weight

of adolescents before and after getting nutrition counseling for 8 weeks ( $p<0.001$ ) (22).

## **CONCLUSION AND SUGGESTIONS**

This study concludes that the overweight handbook significantly increased the physical activity of adolescents at SMP Frater Kendari.

It is suggested for overweight students at SMP Frater Kendari to increase their physical activity by exercising at least 30 minutes for 2-3 times per week and for the next study to include the control group as a comparison.

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