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Sport Culture and Achievement

ISSCA 2014 PROCEEDINGS

*"Global Issues of Sport Science &
Sport Technology Development"*



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Universitas Negeri Yogyakarta



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"Global Issues of Sport Science & Sport Technology Development"
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ANALYSIS FACTORS RELATED TO OVERWEIGHT AT STUDENT OF JUNIOR HIGH SCHOOL

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Abstract

Overweight is an increase of body weight above a standard for age and sex. Overweight is problem of nutrition imbalance as more foodstuff are store as fat than are use for energy and metabolism. This study aim to examine factors that related to overweight at student of high school. This research using crossectional design and simple random sampling. The samples were student grade 1-3 of high school at Bogor, total sample are 194 students. Data analysis by chi square and multiple logistic regression. Variables age, sex, knowledge nutrition, body perception, pocket money, food frequency, habit of snacking, fastfood consumption, energy consumption, habit of physical activity, family income, father and mother' education and nutritional status of parent are as independent variables. The result of this study found that subject with overweight was 44,9%. Based on bivariate analysis, male, habit of snacking, low level physical activity, low father's education, low family income and parental overweight showed significant correlation with overweight in adolescent. The most dominant variable to overweight was habit of snacking.

Keywords: overweight, energy balance, physical activity

INTRODUCTION

Obesity is one of the health problems that prevalently increase in the world population. Giving the increasing prevalence worldwide over the last decade to childhood and adolescent obesity, the risk of morbidity and mortality which the obesity is associated with prevention has become an international public health priority requiring the implementation of effective interventions. The obesity mainly increases in the middle-income groups and in the upper ones, due to the excess of energy consumptions. In the upper and middle-income classes, this obesity is also exacerbated by their trends to consume much fast food of high energy and protein. Absolutely, consuming fast food in urban areas is much higher than in rural areas (Jalal & Atmodjo, 1998). Consuming the excessive energy and lack of physical exercises accumulate fat in the body. Thus, they cause the obesity.

In implicating many dietary factors, the percentage of energy from dietary fat has received particular attention. Recently, however, an expert panel concluded that dietary fat may not be the sole dietary determinant of body fatness, but it has widely been assumed to be (McCrory *et al.*, 1999). In addition, a low level physical activity is another factor to obesity and overweight. This, of course, leaves little time for other physical exercises, like sports. According to Susenas (1995), the digit of the urban's habits in getting exercises in aged 10 years and above is 39.55 percent; and 5.5 percent for those in everyday exercises (Department of Health, 1997). Riskesdas (2007) also showed that 48,2 of people in aged 10 years and over do less physical activities.

In developed countries like the United States, the prevalence of overweight in the age range 6-17 years was 22% (Troiano *et al.*, 1995). Meanwhile, according to Wang (2002), the prevalence of overweight in the United States is 27.3%. In Australia, according to Harvey *et al.* (1994) of 20% more malnourished school children. In China, the prevalence of overweight in the age group 10-18 years was 6.2% in 1997. While Brazil and Russia, respectively 12.3% and 8.5% (Wang *et al.*, 2002). In Riyadh in 1999, the prevalence of overweight was 10.5% and obesity was 8.7% in the age group 6-17 years (Shanmari *et al.*, 2001). In Thailand at 9.3% of children aged 11-17 years were overweight (Samsudin, 1993). According to Florentino *et al.* (2002), the prevalence of overweight children in the Philippine private schools is 24.9%.

Meanwhile, in Malaysia there are 19.2% boys and 16% girls more malnourished (Tee et al, 2002)

In Indonesia, the prevalence of overweight and obesity in adolescents are not nationally well known. However, the research shows this tendency increased. According to Samsudin, from anthropometric measurements which were performed by the Department of Health and Namroe in 1987, the age of 6 to 18 years in Jakarta showed the incidence of overweight and obesity, respectively 10.0 % and 3.1 % for boys and of 23.0 % and 10.2 % for girls. A research on nutrition in Bandung, West Java, showed that 9 % of the school children of men and 15 % of girls from different socioeconomic levels and aged over 10 years have a weight above the 97th percentile. While in 1991, it showed 23% of male students and 28 % of female students whose good socioeconomy have 97 weight percentile (Rasmikayati et al, 1997). The findings of Soekirman's, et.al (1999), the prevalence of overweight was 23.7 % in children aged 8-10 years in the area of Bogor and Jakarta West. Meanwhile, Rijanti (2002) found that 29.8 % incidence rate in overweight is primary school children in Depok.

Over nutrition and obesity will cause degenerative diseases such as coronary heart disease (CHD), hypertension, diabetes mellitus and other diseases. Psychosocially, a person in over nutrition and obesity faces difficulty in a physical activity, low self-esteem, a sense of distress and despair (Ranakusuma, 1990). The tendency shows that the higher overweight in adolescents, the more problems effect to them. The overweight and obesity, which occur to children and adolescents, will settle down to them when they are growing up to adult. Thus, these problems are relatively difficult to overcome (Dietz, 1994). However, Samsudin (1993) postulates that the impact of over nutrition on the children health is generally little if compared it's impact to the adults. The impact of obesity to children shows that the children's growth and physical development of mature faster. Thus, a woman gets her first menstruation earlier, such as psychosocial impact of relation limits, respiratory disorders, hypertension, dermatitis or eczema on skin folds, which cause bad odors to the body.

The tendency of the increasing of overweight to adolescents, especially, for students of junior high school is very alarming because it will lead to degenerative diseases such as diabetes mellitus, coronary heart disease, high blood pressure later they mature. Junior high school students are the future generation who will be the development of resources in the future. Overweight at a relatively young age are likely to be settled until adulthood and is relatively difficult to overcome. Overweight adolescent problems has become as a clinical problem sporadically, mainly in big cities. This relates to researchers interested in studying the factors associated with the incidence of overweight in adolescents.

THE OBJECTIVE OF THE STUDY

The objective of this research is to describe the factors that related to overweight of adolescents or the students of junior high school.

RESEARCH METHOD

Cross-sectional design of this study is that between the independent variables and the dependent variable observed at the same time. This research was conducted in SMP Kesatuan and SMP Bina Insani at Kota Bogor. The number of selected samples are 194 people taken at random from a population of 681 students.

Instrument used was a questionnaires and scales Seca with accuracy of 0.1 kg and height measuring with a microtoise. Data collected included age, sex, nutritional knowledge, perception of the body, the amount of uang saku, frequency of meals, snack habits, fast food consumption habits, physical activity and exercise habits obtained through questionnaires. Data weight and height obtained by the weighing scales and height measurements with microtoise. Student meal consumption data collected through recall. Data parental education, parental income and nutritional obtained with a questionnaire sent by students.

Data Analysis

The data is processed using univariate study to look at the distribution of the data. To determine whether there is a relationship between the dependent variable with the independent variables then performed bivariate analysis with chi squared test. To investigate factors associated overweight used multiple logistic regression. The first phase of the selection of variables potentially in the multivariate analysis. The variables entered the multivariate analysis have when p value < 0.25 and if substance closely related to the incidence of overweight (Mickey & Greenland, 1989) in Hosmer & Lemeshow (1989).

FINDINGS AND DISCUSSION

Overweight, Ages dan Sex

Based on the results of this study obtained a description of the nutritional status of respondents using body mass index (BMI) for age and sex (WHO, 1995). When the nutritional status grouped into two categories shows that the proportion of respondents with a normal category / less amount more (55.1%) than the proportion of respondents with more nutrition (44.9%) (Table 1.). Most (54.6%) of the respondents of this study age <13 years. According to Table 1 that amount of female respondents more (51.0%) than male respondents.

Table 1. Distribution of Respondent According to Nutritional Status, Age and Gender

Nutritional Status	Number (n)	Percentage (%)
Overweight	87	44,9
Non overweight	107	55,1
Total	194	100,0
Age		
> 13,5 years	88	45,4
≤ 13,5 years	106	54,6
Total	194	100,0
Gender		
Female	99	51,0
Male	95	49,0
Total	194	100,0

Statistical test results showed no significant relationship between the incidence of sex with overweight. Male respondents more likely to overweight larger than the female respondents. This finding is in line with the McMurray et al (2000) who obtain the prevalence of overweight in young males is higher (35%) than girls (34%). These findings are similar to research done by Nugroho (1999) which suggested a link between the sexes with more nutrition.

Knowledge to nutrition, Perception to the body and the amount of uang saku

Nutritional knowledge was instrumental in selecting nutritious foods. With the knowledge of good nutrition hopefully someone is able to choose the right foods as needed. In this study, the percentage of respondents who have a high nutritional knowledge as many (59.8%) compared with those who had low nutritional knowledge.

The results of the analysis of research data found that respondents with low category perception of the body more (53.6%) when compared to respondents with moderate category perception of the body. From the results of this study also shows that the respondents with a high category of amount of uang saku fewer (45.4%) compared to respondents with a low category amount of uang saku (54.6%). Statistical analysis of test results show that there is no significant relationship between nutritional knowledge, perception of the body and the amount of uang saku toward overweight. Distribution of respondents according to nutritional knowledge, perception of the body and amount of uang saku can be seen in table 2.

Table 2. Distribution of Respondents According to Nutritional Knowledge, Perception of the Body and Amount of Uang Saku

Variabels	Number (n)	Persentase (%)
Nutritional Knowledge		
Low	58	40,2
High	136	59,8
Total	194	100,0
Perception		
Low	114	53,6
Moderate	80	46,4
Total	194	100,0
Uang Saku		
High	88	45,4
Low	106	54,6
Total	194	100,0

Meal Frequency, Snack Habits dan Fastfood Habits

The results of the analysis of the data shown, respondents with a food-frequency <3 times as many (87.1%) than respondents with a food-frequency > 3 times a day. The results of this study also found that the proportion of respondents who always snack 51.0 percent, while the occasional snack is 49.0 percent. A total of 82.5 percent of respondents used to consume fast food less than or equal to three times a week. Statistically, there was no relationship between the frequency and consumption of fastfood. Distribution of respondents according to the frequency of meals, snacks habits and the consumption of fast food habits can be seen in Table 3.

There was a significant association between the habit of snacks with overweight. Respondents were always snacks in school was 3.9 times will be overweight than respondents that occasionally snack at school. The results of this study together with the findings of the study Marbun (2002), Meilinasari (2002) and Darmawan (2001) who found there are a significant association between the habit of snacks with overweight. According Fardiaz and Fardiaz (1992) street food contributes significantly to specific consumer groups such as students, college students, workers and employees. In adolescents, snack contribution to the energy adequacy of 28.5 percent and the protein adequacy of 43.0 per cent.

Table 3. Distribution of Respondent According to Meal Frequency, Snack Habit and Fastfood Consumption

Meal Frequency	Number (n)	Persentase (%)
> 3x per day	25	12,9
≤ 3x per day	169	87,1
Total	194	100,0
Snack Habit		
Always	99	51,0
Sometimes	95	49,0
Total	194	100,0
FastFood Consumption		
> 3x week	34	17,5
≤ 3x week	160	82,5
Total	194	100,0

Energy Consumption and Macro Nutrition

Distribution of respondents according to the energy consumption of macro-nutrients can be seen in Table 4. The table shows that the majority (83.5%) respondents energy consumption below or equal with the recommended dietary allowance (RDA). The are 16.5 percent of respondents who consume energy just above (RDA). Respondents with fat consumption > RDA there as much as 52.1 percent, higher than respondents with fat consumption < RDA. There is no relationship between energy consumption and fat with overweight. This is probably because the average energy consumption of respondents still under RDA, so that the fat is not needed as a backup, but to meet the needs of both basal metabolism and for the physical activity. Another reason for the accumulation of fat causes overweight is not a fast process (at the present time only), but the process has been going on long enough.

Table 4. Distribution of Respondent According to Energy and Fat Consumption

Energy Consumption	Number (n)	Percentage (%)
> RDA	32	16,5
≤ RDA	162	83,5
Total	194	100,0
Fat Consumption		
> RDA	101	52,1
≤ RDA	93	47,9
Total	194	100,0

Physical Activities and Exercises

The results of the analysis of research data found that respondents with long watching television more two hours a day more (69.1 %) when compared respondents with long watching television less than two hours a day . Respondents who slept more than eight hours a day is 37.6 percent , lower than respondents who slept less than eight hours a day . This study found that the majority of respondents (75.8 %) have a low exercise habits . Just as much as 24.2 percent of respondents with a high exercise habits . The type of exercise performed respondents are badminton , basketball, soccer, swimming, bikes, gymnastics, volley ball, karate, taekwondo, tennis, bowling, running, jogging, push ups and sit ups . Minimal respondents exercise is 30 minutes . There was a significant relationship between exercise habits with overweight. The results were consistent findings with Meilinasari (2002) , Rijanti (2002) , Bernard et.al (1995) and Salbe et.al (2002) and Klesges (2002) who found no association between exercise habit with overweight. While other findings such as Anonymous (2002), Mc Murray (2000), Gazzaniga and Burn (1993), Subardja et al (2000), Pearcey and Castro (2002), Einsenmann et.al (2002) mentioned that there was a relationship of physical activity (including sports activities) with a lower body mass index .

Table 5. Distribution of Respondent According to Watching TV, Sleep and Exercise

Watching TV	Number (n)	Percentage (%)
> 2 hours per day	134	69,1
≤ 2 hours per day	60	30,9
Total	194	100,0
Sleep		
> 8 hours per day	73	37,6
≤ 8 hours per day	121	62,4
Total	194	100,0
Exercise		
Low	147	75,8
High	47	24,2
Total	194	100,0

According Parizkova (undated) is not only the level of spontaneous activity was lower in overweight adolescents but also time to games were less active than normal adolescent. Participation overweight adolescent in sports clubs was low frequency. According to Bray (1993) physical activity (sports) may increase fatty acid oxidation by muscle, regular exercise can lower the tendency to become overweight. Physical exercise raises muscle tissue hypertrophy, in addition, the body fat will decrease gradually. Distribution of respondents according to physical activity and exercise habits can be seen in Table 5.

Income, Parents Educations and Their Nutritional Status

Family income is obtained from the amount of income received by the father and mother (when working). In Table 6 it appears that nearly all (81.0%) respondents family income is low. There are 19.0 percent of the income of parents were high category.

Table 6. Distribution of Respondent According to Income, Education and Nutritional Status of Parents

Income	Number (n)	Percentage (%)
High	24	19,0
Low	102	81,0
Total	126	100,0
Father's Education		
Low	70	41,2
High	100	48,8
Total	170	100,0
Mother's Education		
Low	111	63,8
High	63	36,2
Total	174	100,0
Parent's Nutritional Status		
Overweight	93	55,7
Non Overweight	74	44,3
Total	167	100,0

Respondents with high education fathers categories more (58.8%) than low education fathers category. The reverse of the distribution of respondents according to father's education, respondents with low mother's education categories higher (36.2%) compared to respondents with low mother's education categories. In Table 6. seen that respondents with one or both parents overweight categories higher (55.7%) than respondents who non overweight parents (44.3%). The results of statistical tests that there were relationship between income and nutritional status of the parents with overweight.

The findings of Wang, Y. et al (2001) to mention China and Russia, overweight experienced by high economic groups. According to WHO (2000) with increasing revenues, traditional diets tend to change with the increased intake of animal protein and fat and sugar consumption and decreasing consumption of complex carbohydrates.

The possibility of a child becoming overweight 7% if no parent is overweight, to 40% if one of the parents is more nutrition and increased to 80% if both parents are obese (Nguyen et al, 1996). Nguyen et al further explained that children of overweight parents tend to experience a decline in the ability to increase fat oxidation when fat intake increased compared with children with no parental nutrition. Meanwhile, according to Eck et al (1992) in Obarzanek (1994) asserts children at high risk for overweight if their parents are also overweight.

The Factors of Overweight

The results of multivariate test shows that the variables gender, snack habits, consumption of carbohydrate, long sleep and nutritional status of the parents is variable jointly significantly associated with better nutrition. Male respondents likely to experience overweight 4,348 times than female respondents. Respondents were always likely to snack every day 5,311 times overweight than the respondents sometimes snack. While respondents who sleep more than 8 hours a day chance to 2,709 times compared with who slept less than or equal to 8 hours a day. When viewed from the consumption of carbohydrates, respondents who consumed carbohydrate nutritional above RDA likely 2,250 times overweight than respondents who carbohydrate consumption was less or equal RDA. The respondents that either one or both parents have overweight 3.294 times likely than respondents with both parents of non overweight.

When viewed from the five variables turned out to snack habit variable was the variable most related. This is understandable because it is a snack habits of adolescent were almost evenly across all study sites conducted by Harahap et al (1998)

Street Food Project IPB survey found that the contribution of street food on the menu adolescents in a day in the Bogor is quite high. 21.5% of energy and 20% of the RDI of protein derived from snacks. The availability of various types of snacks in school will obviously contribute significantly to the incidence of overweight, if the student is not provided with adequate nutrition knowledge. This is because there are many negative aspects, positive aspects in addition to snack food consumption. Among the negative aspects in terms of nutrition is still a lot of street food that does not contain even a high-fat balanced nutrition and energy, while in terms of food safety sanitation or hygiene quality is still low and many are using food additives and harmful to health (Fardiaz & Fardiaz, 1992).

CONCLUSION AND SUGGESTIONS

Based on the results of the study concluded that the incidence of overweight was significantly associated with gender, snack habits, exercise habits, education level and nutritional status of the parents. Among all of these factors, the habit of eating snacks are the most dominant factors on the incidence of overweight.

Government should improve the implementation of activities related to UKS to provide more information about the nutritional prevention. Encouraged also to the schools to supervise the cafeteria and traders streetfood around the school in order to provide education about healthy eating and food safety.

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