THE RELATIONSHIP OF DIET WITH OBESITY IN ELEMENTARY SCHOOL CHILDREN

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ABSTRACT

Obesity has become a worldwide epidemic health problem. The World Health Organization says that more than 1.9 billion adults aged 18 years and under are overweight and 600 million of them are obese. Obesity in children is a risk factor for various diseases such as cardiovascular and metabolic disorders. A sedentary lifestyle/excess can be a factor in the occurrence of obesity, one of which is a bad diet. The purpose of this study was to determine the relationship between diet and obesity in elementary school children. This type of research is quantitative-analytical, observational, and cross-sectional as the research design. The sampling technique uses total sampling conducted on Class V children of State Elementary School 104 Palembang. The obesity variable is measured using a z score, while diet is measured using the Food Frequency Questionnaire (FFQ). The data was processed and analyzed using the chi-square test. The results of this study were from 86 respondents obtained more children who were not obese than children who were obese, namely 15 respondents with a percentage (17.4%) who were obese and as many as 71 respondents with a percentage (82.6%) who were not obese. The results of the chi-square test obtained a p-value of 0.045. The conclusion is that there is a relationship between diet and obesity in elementary school children of Negeri 104 Palembang.

Keyword: Diet, Obesity, Elementary School.

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INTRODUCTION

Obesity has become a worldwide epidemic health problem. The World Health Organization (2019) says that more than 1.9 billion adults aged 18 years and under are overweight and 600 million of them are obese.[1] As for according to Ogden et al, (2015) from 2011 to 2014 children aged 6 to 11 years in the United States were more obesity which is 17.5% compared to children aged 2 to 5 years which is about 8.9%.[2]

In Indonesia, obesity also has a fairly high frequency. Based on the Kementrian Kesehatan RI, the number of children aged 5-12 years who experience obesity problems is 18.8%, consisting of 10.8% overweight and 8.8% obese. Based on information from the South Kalimantan Riskesdas, the number of adult children 5-12 years old who are overweight is 10.91% and who are obesity is 12.69%. While in South Sumatra amounted to 9.08% obesity. While in Palembang City 11.59% obesity.[3]

Obesity is a disease described by being overweight due to excess fat accumulation in the body. Obesity is caused by an imbalance in the amount of energy that enters and the amount of energy expended so that body weight becomes heavier due to the accumulation of fat in the body.[4] Obesity in children is a risk factor for various diseases such as cardiovascular, type 2 diabetes mellitus, hypertension, hyperlipidemia, Nonalcoholic Fatty Liver Disease (NAFLD), early puberty, irregular menstruation, and polycystic ovarian conditions, steatohepatitis, resting apnea, asthma, outer muscle problems, and mental problems such as depression.[5] Excessive lifestyle can be a factor in obesity, one of which is a bad diet. Various foods classified as fast food are French fries, fried chicken, hamburgers, soft drinks, pizza, hotdogs, donuts, and others.[6]

Based on this background, the author is interested in conducting a study entitled The Relationship of Diet and Physical Activity with Obesity in Grade V Elementary School Children.

Method

This research is a type of quantitative research with observational and cross-sectional analytics as the research design. This research was carried out at State Elementary School 104 Palembang using a total sampling conducted in December 2022-January 2023 and obtained a sample of 86 students. The variable obesity in children is measured using a z score with a score of $\geq$ 2 SD. Dietary variables are measured using the Food Frequency Questionnaire (FFQ), good diet if the score is $\geq$ 9 and poor diet if the score is <9.[7] The data was processed and analyzed using the chi-square test. This research has received approval from Ethical Clearance No.076/EC/KBHKI/FK-UMP/XI/2022.

Results

The results of univariate research analysis that has been conducted from each respondent with the number of respondents as many as 86 children in SD Negeri 104 Palembang.

Table 1 Distribution of Obesity

Obesity	**Frequency (N=86)**	**Percentage (%)**
Obesity	15	17,4
Not obesity	71	82,6
Diet		
Good	46	53,5
Bad	40	46,5

Based on Table 1, the distribution of the majority of grade V children of SD Negeri 104 Palembang was found to be 71 (82.6%) respondents who were not obese and the children's diet was in a good category, namely 46 people (53.5%).

Table. 2 The Relationship of Diet with Obesity

Diet	**Obesity**			**P Value**
	Obesity N	**No obesity N**	**Total N**	
Good	4	42	46	0.045
Bad	11	29	40	
Total	**15**	**71**	**86**	

Based on table 2 shows that obese children with a good diet number 4 people and children who are not obese with a good diet are as many as 42 people. Obesity children with poor diets obtained as many as 11 people and children who were not obese as many as 29 people. The results of the chi-square test obtained a p-value of 0.045.

Discussion

In Table 1 of the study conducted on grade V children of SD Negeri 104 Palembang with a total of 86 respondents, it was found that more children were not obese than children who were obese, namely 15 respondents with a percentage (17.4%) who were obesity and as many as 71 respondents with a percentage (82.6%) who were not obese. The results of this study are similar to Jannah's research (2018), where the majority of respondents were 59 (81.9%) respondents who were not obese and 13 (18.1%) respondents who were obese.[8]

Based on the table.2 The results of statistical tests with chi-square tests obtained a p-value of 0.045. This shows that there is a relationship between diet and obesity. The results of this study are also supported by research conducted by Evan et al (2017), which suggests that there is a relationship between diet and the incidence of obesity.[9] Eating fast food and junk food, drinks that contain high sugar, and processed snacks that are high in calories and fat but low in other vitamins are at risk of causing obesity.[10] Consumption of fast food, sugary drinks, and

other high-calorie foods is the main contributor to saturated fat intake and added sugar in children. For example, research by Malik et al. (2013) found that consumption of sugar-sweetened beverages significantly contributed to weight gain in children. Obesity is described as being overweight due to the accumulation of excess fat in the body.[11] One of the factors of obesity is diet, this occurs due to the imbalance of the amount of energy that enters and the amount of energy expended so that there is a buildup of fat in the body.[4]

In the study, the majority of respondents who were not obese were respondents who had a good diet. While obese respondents are dominated by respondents who have a poor diet. Eating patterns such as frequent consumption of foods that are high in calories and low in nutrients have a relationship with the occurrence of overweight and obesity.[5] The energy imbalance that occurs causes unused energy to be converted into energy reserves and then stored in fat cells. Because obesity is a fairly long process, if you consume continuously fast food, drinks high in calories and sugar, sweet snacks, and other types of junk food, then lack physical activity, then the calories that enter very much and are expended little as a result of energy reserves stored in fat cells continue to grow. Children's weight continues to rise, and of course, visually they will be fatter, overweight, and even obese.[12,13] Dietary imbalances that exceed the body's needs with energy expenditure will be stored in the form of glycogen. Obesity occurs due to an imbalance in the amount of energy input and output in the body. Minimal energy output (energy expenditure) causes excess energy to be retained in adipose tissue.[14] Consumption of foods with low sugar content has been linked to a decrease in body mass index in children. Reducing your intake of high-sugar foods and drinks can help control calories and reduce the risk of obesity in children.[15]

Obesity respondents also showed that 4 people had a good diet. This can occur because the risk factors for obesity are not only diet but also there are other risk factors including genetic factors and physical activity. Genetic factors in obesity are one of the influential factors that increase the prevalence of obesity in children. Obesity parents play an important role in determining a child's weight through the way they provide intake.[16] Physical activity can balance calories that enter the body and calories used by the body during physical activity, to control weight.[17] People who have normal weight will expend energy to do physical activity but people who have excess weight must do more physical activity to reduce fat stores in the body.[18] In addition, low consumption of fruits, vegetables, and whole grains is associated with increased body weight in children. Dietary fiber is important for maintaining satiety and regulating digestion, so a lack of fiber can trigger excessive calorie consumption and accumulation of body fat.[19,20]

Conclusions and suggestions

This study shows that there is a relationship between diet and obesity in elementary school children of Negeri 104 Palembang. Students can maintain a diet that regulates adequate food intake according to the needs of the body and choose more nutritious foodstuffs. The need to regulate balanced food intake in the form of the amount and type of food in the form of daily food arrangements that contain nutrients, consisting of six substances, namely carbohydrates, proteins, fats, vitamins, minerals, water, and food diversity in sufficient quantities.

Reference

1. WHO. 2019. World Health Organization. Global Strategy on Diet, Physical Activity and Health.
2. Ogden, C. L., Carroll, M. D., Fryar, C. D., & Flegal, K. M. 2015. Prevalence of obesity among adults and youth: United States, 2011-2014.
3. Kemenkes.2018. Epidemi Obesitas. In Jurnal Kesehatan(pp.1–8). http://www.p2ptm.kemkes.go.id/dokumen-ptm/factsheet-obesitas-kit-informasi- obesitas
4. Wijaksana IKE. 2016. Infectobesity dan Periodontitis: Hubungan Dua Arah Obesitas dan Penyakit Periodontal. Odonto Dental jurnal;3(1):67-73
5. Mistry S, Puthussery S. Risk factors of overweight and obesity in childhood and adolescence in South Asian countries: a systematic review of the evidence. Public Health.2015;129(3):200-209
6. Mangla A, Neeru D, Urvashi G, Meenal D. Lifestyle Trends and Obesity among College Going Girls of Delhi. 2019;11(2).
7. Tyas K. 2015. Hubungan Pola Makan Dengan Obesitas Pada Anak Kelas V Dan V I Sekolah Dasar Iba Palembang Tahun 2014. [Skripsi]. Universitas Muhammadiyah Palembang, Palembang.
8. Jannah M. 2018. Faktor Yang Memengaruhi Terjadinya Obesitas Pada Anak Sekolah Di SDN 1 Sigli Kabupaten Pidie Tahun 2018 [Dissertation]. Institut Kesehatan Helvetia, Medan.
9. Evan, Wiyono J, Candrawati E. Hubungan Antara Pola Makan Dengan Kejadian Obesitas Pada Mahasiswa Di Universitas Tribhuwana Tunggadewi Malang. Nursing News : Jurnal Ilmiah Mahasiswa Keperawatan. 2017;2(3):708–717.
10. Bidjuni, Rompas, & Bambuena, I. M. 2014. Hubungan Pola Makan Dengan Kejadian Obesitas Pada Anak Usia 8-10 Tahun Di SD Katolik 03 Frater Don Bosco Man.
11. Malik V S, Pan A, Willett WC, Hu FB. Sugar-sweetened beverages and weight gain in children and adults: a systematic review and meta-analysis. The American Journal of Clinical Nutrition. 2013;98(4):1084-1102.
12. Arundhana AI, Masnar A. 2021. Obesitas Anak dan Remaja: Faktor Risiko, Pencegahan, dan Isu Terkini. Depok: CV Edugizi Pratama Indonesia.
13. Daniels SR. The consequences of childhood overweight and obesity. The future of children. Spring. 2009;16(1):47-67
14. Fazidah AS, Tri M. Metabolisme Lipid dalam Tubuh. Jurnal Inovasi Kesehatan. 2020. 1(2): 60 - 66.
15. Brauchla M, Juan W, Story J. Factors affecting the introduction of fruits and vegetables in the diets of older adults. Journal of Nutrition in Gerontology and Geriatrics. 2012:31(2):97-119.
16. Rismawan M, Dina NLP, Susanti, Astawa. Hubungan Antara Masalah Genetik Dan Faktor Psikologis Dengan Kejadian Obesitas Pada Siswa Kelas Enam Sekolah Dasar Di Denpasar, Bali. Muhammadiyah Journal of Nursing. 2016: 3(1):75-81
17. Suandana INA, Igusti LS. Hubungan Aktivitas Fisik dengan Obesitas Pada Anak Sekolah Dasar. E-Jurnal Medika Udayana. 2014;3(12), 1–13.
18. Sumael ZM, Achmad P, Agusteivie T. Hubungan Aktivitas Fisik Dengan Kejadian Obesitas Di Puskesmas Pangolombian. Epidemia-Jurnal Kesehatan Masyarakat UNIMA.

2020;01(04), 30–36.
19. Ambrosini GL, Emmett PM. Contribution of preschool and school meals to nutrient intake in children aged 1-18 years in Great Britain. Public Health Nutrition. 2019;22(2): 324-333.
20. Lanigan JD. The relationship between practices and child care providers' beliefs related to child feeding and obesity prevention. Journal of nutrition education and behavior. 2011;43(6):541-549.