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QlPhysical Activity Among Obese And Non-Obese School-Aged Children in An Elementary School in Makassar

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Kata Kunci

Physical activity;
Obesity;
Children;
School-aged Children

Abstrak

The Prevalence of obesity among children in the urban areas is increasing due to less physical activity, high consumption of fast-food, and more time spent on using the gadget. This study aimed to identify physical activity among obese and non-obese children. This descriptive study involved 322 obese and non-obese students from 4th to 6th grade in an elementary school in Makassar. Physical Activity Questionnaire for Older Children (PAQ-C) was used to measure children's physical activity, while the anthropometrical parameter was measured using a standardized instrument. Children's body mass index for age z-score (BAZ) was used to classify their nutritional status based on the criteria of Growth Reference for Children from 5 to 19 years old from World Health Organization. Cross-tabulation was used in analyzing the data. Obese and non-obese children in this study were found 53 (16,0%) and 279 (84,0%), respectively. A hundred percent of obese children have low physical activity, while non-obese children have better physical activity. In conclusion, elementary school students in this study have low physical activity, particularly among obese children. Children are rarely spent on their time to do physical activity. There is a need to promote appropriate physical activity among children to prevent and treat obesity among children. Health professionals could provide health education and counseling to children, family and/or schools to manage physical activity among children.

Introduction

Lifestyle changes, including patterns of physical activity in school-age children, have led to an increase in the prevalence of obese children (5-19 years) in developing countries. Global data from 183 countries between 1980-2013 reported that there is an increase in the prevalence of overweight and obese children which is higher than adults (47.1% in children and 27.5% in adults). The prevalence of overweight and obesity among children (age 2-19 years) in developing countries and developed countries has increased. Developed countries show that the prevalence of overweight and obesity is higher in 2013, namely 23.8% of men and 22.6% of women compared to 1980 of 16.9% of men and 16.2% of women. The prevalence of overweight and obesity also increased among children and adolescents in developing countries, which increased from 8.1% in 1980 to 12.9% in 2013 for boys and 8.4% to 13.4% for girls [1]. Documentation of WHO [2] shows the incidence of obesity is not only a problem in high-income countries but also low-income countries, for example, in Africa the number of obese children doubled from 5.4 million in 1990 to 10.6 million in 2014.

According to KEMENKES [3], the prevalence of nutritional of children aged 5-12 years is 18.8% consisted of 10.8% overweight and 8% obesity. Whereas, underweight problem is 11.2% consisted of 7.2% thin and 4% very thin. These data indicated that the prevalence of obesity in children is more significant than underweight children in Indonesia. Based on Riskesdas in 2007, 48.2% of children aged>10 years, performed low physical activity, while children aged of 10-14 years old was 66.9%. South Sulawesi is one of 16 provinces that the population experiences less physical activity above the national prevalence (49.1%; <150 minutes per week) [4]. The same facts happened in Riskesdas 2013, the less physical activity of

childrenaged ≥ 10 yearsold is 31%, exceeding the average number of Indonesia's data which is 26.1%. Sedentary or relaxed behavior 3-5.9 hours in the age group ≥10 years was 42%. Lack of physical activity is an unhealthy lifestyle that triggers the emergence of Non-Communicable Disease (NCD). Mushtaqet al. [5] shows that lifestyles including watching television, working on computers, and playing video games that show significant relationship with obese and overweight children.

The increase in the prevalence of obesity in school-age children will have a negative health impact in childhood and in the long-term effects and a higher risk of becoming obese in adulthood and suffering on Non-Communicable Disease (NCD) in the future. According to Kemenkes [4], deaths from NCD amounted to 59.5%; higher than the incidence of infectious diseases by 28.1%. NCD that can occur during adulthood is a stroke of 26.9%, hypertension 12.3%, diabetes mellitus (DM) 10,2% and ischemic heart disease 9.3%. Kemenkes [3] stated that NCD in Indonesia are asthma, chronic obstructive pulmonary disease, cancer, DM, hyperthyroidism, hypertension, coronary heart disease, heart failure, stroke, chronic kidney failure (CRF), kidney stones, and rheumatism. According to the World Health Organization (WHO), NCD consisted of cardiovascular disease (coronary heart disease, stroke), cancer, chronic respiratory disease (asthma) and diabetes. The impact of obesity is detrimental to children that the role of health workers to prevent school-age children by carrying out physical activities according to age. Therefore, research is needed to identify physical activity in obese and non-obese children as preliminary data in determining the prevention and treatment of obesity in children.

Method

The design of this study was descriptive analysis, which was carried out at the Elementary School of Sudirman 1 and 2 in the city of Makassar in August 2018. The number of samples was 322 children from the 4th to 6th grade student. The instrument used was the Physical Activity Questionnaire for Older Children (PAQ-C) from Kowalski, K., Crocker, P., & Donen, R. [6] to measure the physical activity of children with direct interviews. PAQ-C is an instrument that recall in the last 7 days of physical activity students consisting of 9 questions with 5 points, 1=low score of physical activity, 5=high physical activiy.

Anthropometric parameters with standard instruments measured assessment of children's nutritional status. The body mass index for age z-score (BAZ) was used to assess nutritional status based on Growth Criteria for Children aged 5 to 19 years old from WHO, which use the WHO Anthroplus 2007 application. Body height measurement was performed using a measuring instrument microtoise barefoot. Height is expressed in centimeters (cm). Weight measurement are carried out using digital scales, wearing minimal clothing. Weight is stated in kilograms (kg). Data were analyzed using frequency distribution and cross-tabulation between physical activity and the incidence of obesity in children.

Results

Table 1. Respondents characteristics according to gender, age, nutritional status, and physical activities of school-aged children (n=322)

Characteristics	Frequency	
	N	%
Gender		
Boys	161	48,5
Girls	171	51,5
Age		
8 – 10 years old	110	33,1
> 10 – 12 years old	222	66,9
Nutritional status		
Obesity	53	16,0
Overweight	88	26,5
Normal	188	56,6
Underweight	3	0,9
Physical activities		
High	16	4,8
Low	316	95,2

Table 2. Cross-tabulation of respondents' characteristics of gender, age, the intensity of physical activities, and forms of physical activities to the obese school-aged children (n=322)

Variable	Nutritional status								Total	
	Obesity		Overweight		Normal		Thin			
	N	%	N	%	n	%	N	%	n	%
Gender										
Boys	33	9,9	37	11,1	89	26,8	2	0,6	161	48,5
Girls	20	6,0	51	15,4	99	29,8	1	0,3	171	51,5
Age										
8 – 10 years old	17	5,1	31	9,3	61	18,4	1	0,3	110	33,1
> 10 – 12 years old	36	10,8	57	17,2	127	38,3	2	0,6	222	66,9
Physical activities										
High	0	0,0	5	1,5	11	3,3	0	0,0	16	4,8
Low	53	16,0	83	25,0	177	53,3	3v	0,9	316	95,2
Running race										
Never	24	7,2	53	16,0	96	28,9	2	0,6	175	52,7
1-2 times	4	1,2	1	0,3	7	2,1	0	0,0	12	3,6
3-4 times	25	7,5	32	9,6	83	25,0	1	0,3	141	42,5
5-6 times	0	0,0	2	0,6	0	0,0	0	0,0	2	0,6
7 times or more	0	0,0	0	0,0	2	0,6	0	0,0	2	0,6
Chase one another										
Never	16	4,8	39	11,7	79	23,8	1	0,3	135	40,7
1-2 times	0	0,0	4	1,2	7	2,1	0	0,0	11	3,3
3-4 times	27	8,1	32	9,6	63	19,0	2	0,6	124	37,3
5-6 times	9	2,7	11	3,3	30	9,0	0	0,0	50	15,1
7 times or more	1	0,3	2	0,6	9	2,7	0	0,0	12	3,6
Cycling										
Never	24	7,2	47	14,2	78	23,5	2	0,6	151	45,5
1-2 times	3	0,9	2	0,6	2	0,6	0	0,0	7	2,1
3-4 times	22	6,6	32	9,6	82	24,7	1	0,3	137	41,3
5-6 times	1	0,3	4	1,2	17	5,1	0	0,0	22	6,6
7 times or more	3	0,9	3	0,9	9	2,7	0	0,0	15	4,5
Jogging or running										
Never	29	8,7	54	16,3	120	36,1	2	0,6	205	61,7
1-2 times	1	0,3	1	0,3	1	0,3	0	0,0	3	0,9
3-4 times	23	6,9	28	8,4	59	17,8	1	0,3	111	33,4
5-6 times	0	0,0	3	0,9	6	1,8	0	0,0	9	2,7
7 times or more	0	0,0	2	0,6	2	0,6	0	0,0	4	1,2
Aerobic										
Never	46	13,9	77	23,2	158	47,6	3	0,9	284	85,5
1-2 times	1	0,3	0	0,0	2	0,6	0	0,0	3	0,9
3-4 times	6	1,8	10	3,0	23	6,9	0	0,0	39	11,7
5-6 times	0	0,0	1	0,3	5	1,5	0	0,0	6	1,8
Swimming										
Never	24	7,2	47	14,2	103	31,0	2	0,6	176	53,0
1-2 times	1	0,3	3	0,9	7	2,1	0	0,0	11	3,3
3-4 times	26	7,8	35	10,5	70	21,1	1	0,3	132	39,8
5-6 times	2	0,6	2	0,6	5	1,5	0	0,0	9	2,7
7 times or more	0	0,0	1	0,3	3	0,9	0	0,0	4	1,2
Football										
Never	37	11,1	72	21,7	145	43,7	2	0,6	256	77,1
1-2 times	0	0,0	1	0,3	4	1,2	0	0,0	5	1,5
3-4 times	13	3,9	11	3,3	35	10,5	1	0,3	60	18,1
5-6 times	1	0,3	3	0,9	2	0,6	0	0,0	6	1,8
7 times or more	2	0,6	1	0,3	2	0,6	0	0,0	5	1,5
Badminton										
Never	22	6,6	59	17,8	114	34,3	3	0,9	198	59,6
1-2 times	1	0,3	5	1,5	5	1,5	0	0,0	11	3,3
3-4 times	23	6,9	22	6,6	57	17,2	0	0,0	102	30,7
5-6 times	7	2,1	2	0,6	6	1,8	0	0,0	15	4,5
7 times or more	0	0,0	0	0,0	6	1,8	0	0,0	6	1,8
Soccer										
Never	31	9,3	54	16,3	104	31,3	1	0,3	190	57,2
1-2 times	1	0,3	4	1,2	7	2,1	0	0,0	12	3,6
3-4 times	17	5,1	29	8,7	63	19,0	2	0,6	111	33,4

5-6 times	2	0,6	1	0,3	10	3,0	0	0,0	13	3,9
7 times or more	2	0,6	0	0,0	4	1,2	0	0,0	6	1,8
Jumping										
Never	23	6,9	52	15,7	108	32,5	1	0,3	184	55,4
1-2 times	4	1,2	4	1,2	3	0,9	0	0,0	11	3,3
3-4 times	22	6,6	26	7,8	59	17,8	1	0,3	108	32,5
5-6 times	4	1,2	5	1,5	14	4,2	1	0,3	24	7,2
7 times or more	0	0,0	1	0,3	4	1,2	0	0,0	5	1,5
Climbing										
Never	35	10,5	71	21,4	123	37,0	1	0,3	230	69,3
1-2 times	0	0,0	0	0,0	5	1,5	0	0,0	5	1,5
3-4 times	17	5,1	15	4,5	51	15,4	2	0,6	85	25,6
5-6 times	1	0,3	2	0,6	5	1,5	0	0,0	8	2,4
7 times or more	0	0,0	0	0,0	4	1,2	0	0,0	4	1,2

Table 3. Cross-tabulation of physical activities to the obese school-aged children (N=322)

Variable	Nutritional Status								Total	
	Obesity		Overweight		Normal		Underweight			
	N	%	N	%	n	%	N	%	n	%
High intense activity on sports time										
Never do sports	1	0,3	1	0,3	4	1,2	0	0,0	6	1,8
Almost never	5	1,5	11	3,3	20	6,0	0	0,0	36	10,8
Sometimes	12	3,6	11	3,3	22	6,6	1	0,3	46	13,9
Quite intense	4	1,2	20	6,0	35	10,5	0	0,0	59	17,8
Always	31	9,3	45	13,6	107	32,2	2	0,6	185	55,7
Activities on break time										
Sit (talking, reading, doing the assignment)	26	7,8	30	9,0	79	23,8	0	0,0	135	40,7
Stand up for a while or walking around	2	0,6	8	2,4	19	5,7	0	0,0	29	8,7
Running or playing a bit	3	0,9	25	7,5	30	9,0	1	0,3	59	17,8
Running around and playing a bit	20	6,0	25	7,5	56	16,9	2	0,6	103	31,0
Running and playing hard on most of the break time	2	0,6	0	0,0	4	1,2	0	0,0	6	1,8
Activities on lunch break										
Sit (talking, reading, doing the assignment)	38	11,4	49	14,8	113	34,0	2	0,6	202	60,8
Stand up for a while or walking around	2	0,6	5	1,5	15	4,5	0	0,0	22	6,6
Running or playing a bit	3	0,9	21	6,3	30	0,9	1	0,3	55	16,6
Running around and playing a bit	10	3,0	13	3,9	28	8,4	0	0,0	51	15,4
Running and playing hard on most of the break time	0	0,0	0	0,0	2	0,6	0	0,0	2	0,6
The frequency of high activities after school										

Never	44	13,3	60	18,1	120	36,1	2	0,6	226	68,1
1 time last week	3	0,9	15	4,5	36	10,8	0	0,0	54	16,3
2 or 3 times last week	1	0,3	5	1,5	9	2,7	1	0,3	16	4,8
4 times last week	3	0,9	2	0,6	15	4,5	0	0,0	20	6,0
5 times last week	2	0,6	6	1,8	8	2,4	0	0,0	16	4,8
The frequency of high activities on the night										
Never	40	12,0	71	21,4	155	46,7	3	0,9	269	81,0
1 time last week	11	3,3	9	2,7	23	6,9	0	0,0	43	13,0
2 or 3 times last week	1	0,3	3	0,9	6	1,8	0	0,0	10	3,0
4 or 5 times last week	0	0,0	2	0,6	2	0,6	0	0,0	4	1,2
7 times last week	1	0,3	3	0,9	2	0,6	0	0,0	6	1,8
The frequency of high activities last week										
Never	16	4,8	21	6,3	72	21,7	2	0,6	111	33,4
1 time	28	8,4	46	13,9	78	23,5	0	0,0	152	45,8
2-3 times	8	2,4	18	5,4	25	7,5	1	0,3	52	15,7
4-5 times	1	0,3	2	0,6	5	1,5	0	0,0	8	2,4
6 times or more	0	0,0	1	0,3	8	2,4	0	0,0	9	2,7
Physical activities on spare times										
Few	11	3,3	9	2,7	21	6,3	0	0,0	41	12,3
Seldom	38	11,4	63	19,0	141	42,5	2	0,6	244	73,5
Sometimes	2	0,6	13	3,9	15	4,5	1	0,3	31	9,3
Regularly	2	0,6	2	0,6	10	3,0	0	0,0	14	4,2
Always	0	0,0	1	0,3	1	0,3	0	0,0	2	0,6

Discussion

The results showed that overall rates of overweight and obesity were 42.5% with obesity as much as 16% and overweight by 26.5%, while most 56.6% of children's BMI is still within normal limits. This result is higher than the data on the prevalence of overweight and obesity in developed countries [7]. From the results of the study along with the increasing age of children, the incidence of overweight and obesity is getting bigger. At the age of> 10-12 years, there was an increase in the incidence of obesity by 5.7% and an increase in the incidence of overweight by 7.9% than children aged 8-10 years. The incidence of obesity and overweight which increases with age increases because the younger children tend to prefer to play. While when children grow older, they are more likely to gather with friends to play video games, gadgets, watch television, and other activities that do not require high activity [8]. The incidence of overweight is 4.3% higher in girls than boys, while the incidence of obesity is 3.9% higher in boys. In non-obese children 3% higher in girls. It can be concluded that gender is almost evenly distributed in obese and non-obese children.

The results of this study indicate that physical activity of 332 children contained 95.2% low activity. It can be concluded that at this time, the physical activity of children is very low due to various reasons. One reason for the low physical activity in children is the use of gadgets. The results of the research by Sarah and Pujonarti [8] showed that there was an increased risk of obesity 1.57 times due to the low level of activity because of the use of gadgets> 2 hours a day. Currently, the number of games that can be downloaded by students and the lack of supervision of parents and teachers causes many elementary school children to use gadgets to play games. Children prefer to play games on their own or when they gather with friends. This trend can be seen when taking research data during breaks where more children

use gadgets to play games. Observations during data collection were found in children who carried cellphones and were made to play games during recess.

The incidence of obesity is strongly influenced by the level and type of physical activity carried out by children. Of the several types of physical activity, most children with an average of 56.4% have never done physical activity in the past week, and there is an average of about 35% of respondents doing various types of physical activity for-4 times a week. The loss of traditional games in the urban areas is also a cause of lack of activity in children. Types of physical activity that are often carried out by children as much as 3-4 times a week, both obese and non-obese children based on the percentage sequence are running competitions (42.5%), swimming (39.8%), playing chases (37.3%), soccer (33,4%) and jogging (33.4%). Running competitions conducted by children are non-official running competitions made by schools, but they often take a break or go home by a running race from school with their friends in the field, running into the classroom and when they went home. In childhood, running is indeed their primary activity, but this activity is diminishing now. The narrowness of the school field and the fewer fields that children can use to run around or play football with their friends are not comparable to the number of students because the location of the primary school is a complex consisting of 4 schools with 1 page of sports.

Conclusion and Suggestion

Primary school students in this study have low physical activity, especially in obese children. Children rarely spend their time doing physical activities. It is necessary to promote proper physical activity among children to prevent and treat obesity among children. Health professionals can provide health education to children, families, and/ or schools to manage physical activity for children.

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