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Overview of Nutritional Status and Physical Activity in Elementary School Students

David MT Simangunsong
Department of Physiology, Faculty of Medicine, University of HKBP Nommensen Medan, Indonesia

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ABSTRACT

Currently, the problem of nutritional status, especially overweight and obesity, is a global health problem that is often faced in various countries. Overweight nutritional status is a state of excess nutrition where the Ministry of Health criteria has a BMI of 25.1-27.0 and obesity nutritional status is a state of excess nutrition where the Ministry of Health criteria has a BMI > 27.0. Problems with nutritional status do not only occur in adults, but also affect children. The nutritional status of overweight and obesity is influenced by physical activity factors carried out by elementary school students in grades 3 to 6 at Sultan Agung Private Elementary School and Methodist Pematangsiantar Elementary School. To study the nutritional status and physical activity of elementary school students in grades 3 to 6 who are overweight and obese at Sultan Agung Private Elementary School and Methodist Pematangsiantar Elementary School in 2019. This research is a descriptive study with a cross-sectional study design. The sampling technique used is Probability Sampling, in this case Total Sampling is used. There were 57.7% and 42.3% students who were overweight and obese at SD Sultan Agung while SD Methodis had 71.4% and 28.6% who were overweight and obese. Frequency of naps per week, 1-3x/week for 65 students (20.8%). Frequency of naps per day, <1 hour/day for 49 students (15.2%). Frequency of watching TV per week, 1-3x/week as many as 98 students (30.4%). Frequency of watching TV per day, 1-2 hours/day as many as 114 students (35.4%). Frequency of exercising per week, 1-3x/week as many as 209 students (65%). Frequency of exercising per day, 1-2 hours/day as many as 160 students (50%). Frequency of playing per week, playing every day as many as 76 students (23.6%). Frequency of playing per day, 1-2 hours/day as many as 74 students (22.9%). Doing household chores per week, 1-3x/week as many as 152 students (47.2%). Using transportation to go to school as many as 258 students (80.1%). Using transportation to travel as many as 285 students (88.5%). Students' physical activity was found to be lacking.

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1. INTRODUCTION

Currently, the problem of nutritional status, especially overweight and obesity, is a global health problem that is often faced in various countries. This problem does not only occur in adults but has an impact on children as well. According to data from the World Health Organization (WHO), the percentage of children in the world experiencing overweight and obesity problems in 1990 was 20 million children with a percentage of 4.2% while in 2010 there was an increase reaching more than 42 million children in the world with a percentage of 6.7 % and it is estimated that by 2020, this percentage will increase to 9.1% which will reach around 60 million children in the world.

According to data from the National Health And Nutrition Examination Survey (NHANES), in 2011-2014 the United States experienced an increase in the problem of overweight and obesity nutritional status with the indicators BB (weight) and TB (height) for ages 2-19. NHANES data for 2011-2012 found 14.9% for the percentage of overweight and 16.9% for the percentage of obesity. In

2013-2014 this figure increased to 16.2% for the percentage of overweight and 17.2% for the percentage of obesity.

According to Basic Health Research (RISKESDAS) data, the 2007 national figures for the prevalence of overweight and obesity nutritional status in children aged 5-14 years, namely 15.9%, with the percentage of obesity in males 9.5% and the percentage of obesity in females 6.4%3, in 2010 to 18.4% with a percentage of fat in men 10.7% and a percentage of fat in women 7.7%4, and data in 2013 is still quite high, namely 18.8% with a percentage of fat (overweight) 10.8% and a very fat (obese) percentage of 8 %.

RISKESDAS data shows that the prevalence of overweight and obesity in children aged 5-12 years in 2007 reached 26.7%, with the percentage of obesity in males 14.9% and the percentage in females 11.8%, in 2010 it increased to 10.5 %, while in 2013 it had a prevalence of 20% consisting of 11.0% overweight and 9.0% very obese. According to the Summary of Student Health Screening Results from the Simalungun District Health Office, the obesity rate in elementary school children in Simalungun District in 2016 reached 1,266 students out of 16,913 students with normal nutritional status, with a percentage of 7.5%.

The problem of the high prevalence of overweight and obesity nutritional status in Indonesia, especially in North Sumatra Province, cannot be separated from several factors that can affect a child's overweight. The factors that have an influence on the nutritional status of overweight and obesity are physical activity. Unbalanced activity also plays an important role in a child's nutritional status in terms of their habit of watching TV, playing and doing their homework.

Based on this background, the researcher was interested in further researching the description of the socio-economic characteristics of families and physical activity in elementary school students in grades 3 to 6 who were overweight and obese at Sultan Agung Private Elementary School and Methodist Pematangsiantar Elementary School in 2011 based on prevalence data. overweight and obesity are still quite high and the factors that influence the nutritional status of overweight and obesity are still multifactorial.

2. METHODS

This research is a descriptive study with a cross-sectional study design. The places used in this study were Sultan Agung Private Elementary School and Pematangsiantar Methodist Elementary School. This research was conducted in February 2019 – August 2019. The target population in this study were all elementary school students in Grade 3 to Grade 6 who were overweight and obese and did not follow a diet program for obesity at Pematangsiantar Elementary School. The affordable population for this study were elementary school students in grades 3 to grade 6 who were overweight and obese and did not follow a diet program for obesity at Sultan Agung Private Elementary School and Methodist Pematangsiantar Elementary School. The sample in this study were elementary school students in grade 3 grade 6 at SD Methodist and SD Sultan Agung who are overweight and obese and are not on a diet. For obesity. The sampling technique used is Probability Sampling, in this case Total Sampling is used. Univariate analysis was used to describe each variable with an overview of its frequency distribution using crosstabs. Variables with numeric data use the form of descriptive statistics, and variables with categorical data are presented in the form of numbers and percentages.

3. RESULTS AND DISCUSSION

Overview of Overweight and Obesity

The respondents of this study were elementary school students in grades 3 to 6 with an age range of 9–12 years. Child characteristics include weight, height, gender, family socio-economic, eating habits and physical activity.

Table 1 Overview of Overweight BMI and Obesity at Sultan Agung Private Elementary School and SD Methodist

School name	Overweight		Obessitas		Total	
	n	%	n	%	n	%

Sultan Agung Elementary School	101	57,7	74	42,3	175	100
SD Methodist	105	71.4	42	28,6	147	100

Table 1 shows the number of students who are overweight and obese at Sultan Agung Private Elementary School and Methodist Elementary School. In Sultan Agung Private Elementary School, 101 students (57.7%) were overweight and 74 students (42.3%) were obese, while in Methodist Elementary School, 105 students (71.4%) were found to be overweight. and students who are obese as many as 42 students (28.6%).

Description of the Characteristics of Physical Activity

Physical activity that is carried out by a person is associated with the potential for overweight and obesity in a person. This can happen because there is no balance between greater energy consumption and the amount of energy released that can be stored as fat. 57 According to Paul et al. There is a significant relationship between a person's physical activity and overweight and obesity.

a. Nap Frequency in a Week

It is known in table 2 that 45 students (44.6%) at Sultan Agung Private Elementary School who are overweight never take a nap and 22 students (29.7%) who are obese have naps a week 1-3 times a week. Sunday. Whereas in Methodist Elementary School students who were overweight found as many as 43 students (41.0%) took 1-3x/week naps a week and in students who were obese there were 17 students (40.5%) took naps every day.

Table 2 Description of Nap/Sunday Nap Frequency Characteristics

	Nap/Sunday Nap Frequency Characteristics									
	Setiap Hari		**4-6x/ minggu**		**1-3x / minggu**		**Tidak Pernah**		**Total**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
SD Sultan Agung										
Overweight	9	8,9	7	6,9	40	39,6	45	44,6	101	100
Obesity	19	25,7	21	28.4	22	29.7	12	16.2	74	100
SD Methodist										
Overweight	13	12,4	42	40.0	43	41.0	7	6.7	105	100
Obesity	17	40.5	15	35.7	2	4.8	8	19.0	42	100

In this study, the results shown from table 2 found that 65 students had a habit of taking 1-3x/week naps and the other 45 students did not have the habit of taking naps. This is presumably due to the behavior of children who do not have the habit of taking naps and the lack of monitoring from parents for their nap hours, accompanied by busy school activities so that less time is used for naps. According to Chaput et al. Children who have a little sleep time are at higher risk of experiencing obesity. Vioque argues that this possibility is due to the fact that obese people have poor sleep quality.

b. Frequency of Napping Hours in a Day

Table 3 shows that in Sultan Agung Private Elementary School students who are overweight have a percentage of 45 students (44.6%) who never take a nap and students who are obese have 24 students who sleep for 2-3 hours/day (32.4%). SD Methodist found that overweight students had a percentage of 46 students (43.8%) napping <1 hour/day and obese students had a percentage of 13 students (31.0%) napping for 2-3 hours/day.

Table 3 Demographic Description of Nap Frequency/Hour/Day

	Work Time For Nap Frequency/Hour/Day						
Karakteristik	< 1 hour/day	1-2 hour/day	2-3 hour/day	3-4 hour/day	>4 hour/day	Never	Total

	n	%	n	%	n	%	n	%	n	%	n	%	n	%
SD Sultan Agung														
Overweight	28	27,7	21	20,8	6	5,9	1	1,0	-	-	45	44,6	101	100
Obesitas	13	17,6	19	25,7	24	32,4	6	8,1	-	-	12	16,2	74	100
SD Methodist														
Overweight	46	43,8	44	41,9	6	5,7	2	1,9	-	-	7	6,7	105	100
Obesitas	3	7,1	11	26,3	12	28,6	4	9,5	4	9,5	8	19,0	42	100

The results of this study found that the average student has nap time per day, which is less than 1 hour and there are 74 students who never take a nap. This is presumably because the students do not have the habit of taking naps or the lack of parental supervision of their nap time because parents work more outside of the day-to-day and school activities from morning to evening. According to Patel et al. lack of sleep can result in a loss of 18% leptin and an increase of 28% ghrelin which can cause an increase in appetite of approximately 23-24%. If leptin decreases and ghrelin increases, it can increase hunger and make metabolism slow down and reduce the ability to burn fat in the body.

Patel and Hu argue that the increase in food intake is mainly high-fat and high-carbohydrate foods. These changes are associated with an increase in serum ghrelin and a decrease in serum leptin, suggesting that sleep deprivation can affect the peripheral regulators of hunger. Short duration of naps and never having nap time are also caused by a lack of moderate and strenuous physical activity and an increase in sedentary life behaviors such as watching TV, playing on computers, laptops or tablets and gadgets as well as teaching and learning activities for elementary school children from morning to late afternoon. may affect obesity in children.

c. Frequency of Watching TV in a Week

In table 4 it is known that Sultan Agung Private Elementary School which has overweight students watch TV as many as 50 students (49.5%) 1-3x/week and in students who are obese there are 26 students (35.1%) watch TV 4-6x/ Sunday. Whereas in SD Methodist it was found that 48 students (45.7%) who were overweight watched TV 1-3x/week, students who were obese had a percentage of 26 students (35.1%) watched TV 4-6x/week.

Table 4. Frequency of Watching TV/ week

Karakteristik	Waktu untuk Menonton TV/minggu									
	Setiap Hari		4-6x/ minggu		1-3x/ minggu		Tidak Pernah		Total	
	n	%	n	%	n	%	n	%	n	%
SD Sultan Agung										
Overweight	44	43,6	3	3,0	50	49,5	4	4,0	101	100
Obesitas	23	32,1	26	35,1	22	29,7	3	4,1	74	100
SD Methodist										
Overweight	27	25,7	24	22,9	48	45,7	6	5,7	105	100
Obesitas	19	45,2	13	31,9	6	14,3	4	9,5	42	100

The results in this study found that on average students at Sultan Agung Private Elementary School and Methodist Elementary School have time to watch TV 1-3 times/week. Watching TV is a form of passive activity that makes children feel happy and content. does not always have a positive impact if done excessively. Watching TV is at risk of causing obesity because of non-physical activity. Reduced physical activity will eventually result in decreased energy used (energy expenditure). Watching TV is also very closely related to the habit of eating snacks (snacks) which will provide high energy intake in children. This energy balance imbalance can cause obesity.

d. TV Watching Hours Frequency in a Day

In table 5 it is known that in Sultan Agung Private Elementary School students who are overweight have a percentage of 61 students (60.4%) watching TV for 1-2 hours/day and in students who are obese there are as many as 23 students (31.1%) watching TV for 2-3 hours/day. Whereas in SD Methodist students who are overweight have a percentage of 53 students (50.5%) watching TV for 1-2 hours/day and students who are obese have time to watch TV 17 students (40.5%) for 3-4 hours /day.

Table 5 Description of TV Watching Frequency/Hour/Day Characteristics

Characteristik	Watching TV / hour/day													
	<1 hour/day		1-2 hour/day		2-3 hour/day		3-4 hour/day		>4 hour/day		No Once		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sultan Agung Elementary School														
Overweight	9	8,9	61	60,4	17	16,8	7	6,9	3	3.0	4	4.0	101	100
Obesity	4	5,4	17	23.0	23	31,1	20	27.0	7	9,5	3	4,1	74	100
SD Methodist														
Overweight	9	8,6	53	50.5	27	25,7	8	7,6	2	1,9	6	5,7	105	100
Obesity	3	7,1	5	11,9	12	28,6	17	40.5	1	2,4	4	9,5	42	100

Table 5 gives the percentage of students who watch TV in a day using 1-2 hours per day. Overall, children who watch TV more than eight hours a week are 1.55 times more likely to become obese than children who watch TV less than eight hours per week. Tremblay added that watching TV for more than 2 hours a day has a high risk of becoming overweight/obese because more time spent watching TV is associated with a higher risk of experiencing unhealthy body composition. Watching TV is a behavior that tends to be sedentary. The long duration of watching TV increases the risk of obesity in children. One of the factors causing the global increase in the incidence of overweight and obesity in children is increased sedentary behavior and reduced physical activity.

e. Frequency of Exercising in a Week

Sultan Agung Private Elementary School found that students who were overweight and obese had the same exercise frequency, namely 1-3x/week with a percentage of 56 students (55.4%) and 55 students (74.3%). These results are also not much different from the results of students who are overweight and obese at SD Methodist who have a frequency of exercising 1-3x/week with a percentage of 70 students (66.7%) and 28 students (66.7%).

Table 6 Description of the Characteristics of Exercise Frequency/Week

Characteristics	Time to Exercise/week									
	Every day		4-6x/ week		1-3x/week		Never		Total	
	n	%	n	%	n	%	n	%	n	%
Sultan Agung Elementary School										
Overweight	22	21,8	13	12,9	56	55.4	10	9,9	101	100
Obesity	11	14,9	6	8,1	55	74,3	2	2,7	74	100
SD Methodist										
Overweight	9	8,6	26	24,8	70	66,7	-	-	105	100
Obesity	4	9,5	10	23,8	28	66,7	-	-	42	100

The results in this study found that on average students carried out sports activities 1-3 times a week, this could happen due to the sports lesson schedule provided by the school. The percentage results from this study found that the average student/i exercised in a week as much as 1-3x/week. This is due to following a school schedule that at least carries out a sports schedule every 1-2 times a week,

sedentary behavior such as playing gadgets or watching TV causes a lack of time to exercise. Research conducted by Mustelin et al. shows that there is a significant relationship between physical activity and exercise with obesity in children. In addition, it turns out that children who do not exercise regularly tend to have a higher energy intake compared to children who exercise regularly. Food and physical activity can affect the incidence of obesity both together and individually.

f. Frequency of Exercising Hours in a Day

Table 4.7 shows that Sultan Agung Private Elementary School has overweight students who watch TV for 1-2 hours/day with a percentage of 45 students (44.6%), this is also the same as the frequency of students who are obese with a percentage of 37 students (50.0%) to watch TV for 1-2 hours/day. These results are also not different from SD Methodist which has overweight and obese students who watch TV for 1-2 hours/day with a percentage of 59 students (56.2%) and 19 students (45.2%).

Table 7 Description of the Characteristics of Exercise Frequency/Hour/Day

Characteristics	Exercise Frequency/Hour/Day													
	<1 hour/day		1-2 hour/day		2-3hour/day		3-4 hours/day		>4 hours/day		Never		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sultan Agung Elementary School														
Overweight	38	37,6	45	44,6	7	6,9	1	1.0	-	-	10	9,9	101	100
Obesity	29	39,2	37	50.0	6	8,1	-	-	-	-	2	2,7	74	100
SD Methodist														
Overweight	16	15,2	59	56,2	27	25,7	3	2,9	-	-	-	-	105	100

The results of this study found that students from the two dominant schools had time to exercise for 1-2 hours/day. This happens considering the school schedule which only has around 1-2 hours per day and also with advances in technology, children tend to have passive physical activity and increased sedentary life attitudes make them reluctant to do sports. Another thing that can affect students rarely exercising is that most of them only spend time at home and playing gadgets and possibly activities that are carried out on weekends going to shopping centers or going to places to eat to gather with family, given the tight time to study at school and the time of parents who work all day.

g. Frequency of Playing in a Week

The results of table 4.8 show that the frequency of playing at Sultan Agung Private Elementary School for students who are overweight has a percentage of 53 students (52.5%) playing every day and students who are obese have a percentage of 24 students (73.0%) playing 4-6x/week . Whereas at SD Methodist, students who are overweight have a percentage of 48 students (45.7%) playing 1-3x/week and obese students have a percentage of 23 students (54.8%) playing every day.

Table 8 Description of the Characteristics of Frequency of Playing/Week

Characteristics	Frequency of Playing/Week Time to Play/week									
	Every day		4-6x/ week		1-3 x/week		Never		Total	
	n	%	n	%	n	%	n	%	n	%
Sultan Agung Elementary School										
Overweight	53	52.5	3	3.0	40	39,4	5	5.0	101	100
Obesity	3	4,1	24	73.0	14	18,9	3	4,1	74	100
SD Methodist										
Overweight	17	16,2	33	31,4	48	45,7	7	6,7	105	100
Obesity	23	54,8	13	31.0	4	9,5	2	4,8	42	100

The results in this study found that the average student had a frequency of playing 1-3x/week. Playing activity here can mean activities carried out outside or carried out inside the house. However, what is happening mostly at this time is a change in lifestyle to a sedentary lifestyle. According to the Institute of Medicine of the National Academies, children spend quite a lot of time playing with electronic equipment, from computers to video games, rather than playing outside the house.

h. Frequency of Playing Hours in a Day

The frequency of playing per hour per day, Sultan Agung Private Elementary School students who are overweight and obese have a percentage of 44 students (43.6%) and 30 students (40.5%) play for 1-2 hours/day. Whereas in Methodist Elementary School students who are overweight and obese have the same frequency of playing for 2-3 hours/day with a percentage of 39 students (37.1%) and 15 students (35.7%).

Table 9 Description of Playing Frequency/Hour/Day Characteristics

Characteristics	Time to Play /hour/day													
	<1 hour/day		1-2 hour/day		2-3 hour/day		3-4 hour/day		>4 hour/day		Never		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sultan Agung Elementary School														
Overweight	22	21,8	44	43,6	13	12,9	11	10,9	6	5,9	5	5.0	101	100
Obesity	10	13.5	30	40.5	19	25,7	9	12,2	3	4,1	3	4,1	74	100
SD Methodist														
Overweight	3	2,9	13	12,4	39	37,1	35	33,3	8	7,6	7	6,7	105	100
Obesity	1	2,4	4	9,5	15	35,7	14	33,3	6	14,3	2	4,8	42	100

The results of this study found that students at Sultan Agung Private Elementary School dominantly had the habit of playing for 2-3 hours per day. Play activities in this study can mean those carried out inside or outside the home. The cause of the high rate of overweight and obesity globally is due to increased sedentary behavior. This is also supported by research conducted by Suprihatun who said that low physical activity and watching a lot of TV, playing games are at risk for child obesity.

i. Frequency of Doing Homework in a Week

The frequency of doing homework in a week for students who are overweight and obese at Sultan Agung Private Elementary School has the same time, namely 1-3x/week with a percentage of 51 students (50.5%) and 42 students (56.8%). These results are also not much different from students at SD Methodist who are overweight and obese who do homework 1-3x/week with a percentage of 39 students (37.1%) and 20 students (47.6%).

Table 10 Description of the Frequency of Doing Homework

Characteristics	Frequency of Doing Homework /Week									
	Every day		4-6x/week		1-3x/week		Never		Total	
	n	%	n	%	n	%	n	%	N	%
Sultan Agung Elementary School										
Overweight	24	23,8	20	19,8	51	50.5	6	5,9	101	100
Obesity	17	23.0	9	12,2	42	56,8	6	8,1	74	100
SD Methodist										
Overweight	18	17,1	38	36,2	39	37,1	10	9,5	105	100
Obesity	5	11,9	15	35,7	20	47,6	2	4,8	42	100

In addition to physical activity in the form of sports, there is also household and core physical activity, namely physical activity carried out as part of physical activity at home. The results in this study found that the average student did homework 1-3x/week. children to be able to carry out sufficient physical activity to prevent the occurrence of obesity in children, especially in elementary school

students, but what is happening at this time is the availability of various electronic equipment that supports all of this work, so that household chores become reduced, supported by an increase in sedentary life and the presence of housemaids who help with the housework makes children lazy to do housework.

j. Transportation Used To Get to School

In addition to the activities that are usually carried out daily by students, the means of transportation to go to school and travel should be taken into account, because it also affects the size of the physical activity carried out. Means of transportation to school and traveling are divided into two categories, namely walking/cycling and using a vehicle.

Table 11. Transportation use to school

Karakteristik	Transportasi Untuk ke Sekolah					
	Jalan kaki/Bersepeda		Menggunakan Kendaraan		Total	
	n	%	n	%	n	%
SD Sultan Agung						
Overweight	26	25,7	75	74,3	101	100
Obesitas	15	20,3	59	79,9	74	100
SD Methodist						
Overweight	21	20,0	84	80,0	105	100
Obesitas	2	4,8	40	95,2	42	100

The percentage of transportation used to go to school from Sultan Agung Private Elementary School students who are overweight and obese choose to use vehicles with a percentage of 75 students (74.3%) and 59 students (79.9%). The same percentage also exists for students who are overweight and obese at Methodist Elementary School, most of whom travel to school using vehicles with a percentage of 84 students (80.0%) and 40 students (95.2%).

The results in the study, respondents who were overweight and obese were dominant to use vehicles as a means of transportation to school. This can happen because of the distance between the house and each school which makes it impossible to walk. However, currently there is a decrease in physical activity in students which can play a role in increasing the incidence of overweight and obesity

k. Transportation Used To Travel

As for the percentage of transportation used for commuting, students who are overweight and obese choose to use vehicles with the percentages (65.1%) and (85.1%). Likewise, students who are overweight and obese mostly choose to use a vehicle to travel with the percentage (93.3%) and (90.5%).

Table 12. Transportation used for commuting

Karakteristik	Transportasi untuk Berpergian					
	Jalan kaki/Bersepeda		Menggunakan Kendaraan		Total	
	n	%	n	%	n	%
SD Sultan Agung						
Overweight	15	14.9	86	65.1	101	100
Obesitas	11	14.9	63	85.1	74	100
SD Methodist						
Overweight	7	6.7	98	93.3	105	100
Obesitas	4	9.5	38	90.5	42	100

The results of research on students who are overweight and obese use transportation to go to school. This can happen due to distance considerations in traveling. Another thing that can be the cause

is due to technological advances. Today, there are many means of transportation available that make people prefer to use vehicles rather than walk even though the distance traveled is not far. In addition, the use of escalators or elevators is used more often than using stairs, this results in decreased physical activity which means using less energy and ultimately more energy is stored and converted into fat.

4. CONCLUSION

There were 57.7% and 42.3% students who were overweight and obese at Sultan Agung Elementary School, while at SD Methodis there were 71.4% and 28.6% who were overweight and obese. Frequency of naps per week, 1-3x/week for 65 students (20.8%). Frequency of naps per day, <1 hour/day for 49 students (15.2%). Frequency of watching TV per week, 1-3x/week as many as 98 students (30.4%). Frequency of watching TV per day, 1-2 hours/day as many as 114 students (35.4%). Frequency of exercising per week, 1-3x/week as many as 209 students (65%). Frequency of exercising per day, 1-2 hours/day as many as 160 students (50%). Frequency of playing per week, playing every day as many as 76 students (23.6%). Frequency of playing per day, 1-2 hours/day as many as 74 students (22.9%). Doing household chores per week, 1-3x/week as many as 152 students (47.2%). Using transportation to go to school as many as 258 students (80.1%). Using transportation to travel as many as 285 students (88.5%).

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