



sleep as good (41.4%) whereas 34.2% of them evaluated it as particularly good. On average, their PSQI score was  $4.8 \pm 2.8$  points.

#### *Association between the sleep of children and caregivers*

Most children that studied during the evening ( $p < 0.001$ ), that spent  $> 2$  hours in front of screens ( $p = 0.024$ ), and that did not report pre-existing diseases ( $p = 0.018$ ) reported adequate sleep hours (Chart 1 and 2).

There was a significant statistical association between the variables “do not go to work” and “the child’s adequate amount of sleep” ( $p = 0.048$ ). There was no association between the classification of the children’s sleep hours and the caregivers’ sleep quality and drowsiness (Chart 3).

Bladder eliminations in bed were common in the participants with SDSC values  $> 39$  points, that is, with bad sleep quality ( $p = 0.018$ ).

The variables of physical practice during free time ( $p = 0.049$ ) and acceptance of school meals ( $p = 0.008$ ) seemed to be linked with SDSC values  $\leq 39$  points (good sleep quality) (Chart 4 and 5).

Among the caregivers that did not show excessive daily drowsiness ( $p = 0.046$ ) and did not report suffering from diseases ( $p = 0.009$ ), predominated the children with SDSC  $\leq 39$  points (good sleep quality).

There was a relationship between the variables “evaluation of the child’s sleep” and SDSC ( $p = 0.010$ ). In this case, one perceives that most of the cases of SDSC  $\leq 39$  points are common in the caregivers that evaluated their child’s sleep quality as good or very good (Chart 6).

In the proposed regression model, one observes that the factors associated with “inadequate number of sleeping hours in children” were:

- Caregiver goes to work ( $p = 0.015$ ): 54% of these cases showed higher values of inadequate sleeping hours.

#### **Chart 1**

*Association between the classification of sleep hours of children and sociodemographic variable. Brazil, 2018.*

Variables	Hours of sleep				P-value
	Inadequate		Adequate		
<b>Study period</b>					$<0,001^1$
Morning	52	52.0	48	48.0	
Evening	26	21.3	96	78.7	
<b>Age group</b>					0.903 <sup>1</sup>
6 to 8	34	34.7	64	65.3	
9 to 11	44	35.5	80	64.5	
<b>Gender</b>					0.614 <sup>1</sup>
Female	45	36.6	78	63.4	
Male	33	33.3	66	66.7	
<b>Skin color</b>					0.070 <sup>2</sup>
White	28	45.2	34	54.8	
Black	2	12.5	14	87.5	
Brown	45	32.6	93	67.4	
Yellow	1	50.0	1	50.0	
Other	2	50.0	2	50.0	
<b>BMI</b>					0.434 <sup>2</sup>
Obese	16	38.1	26	61.9	
Overweight	15	41.7	21	58.3	
Eutrophic	38	35.5	69	64.5	
Underweight	9	24.3	28	75.7	
<b>Overweight or obesity</b>					0.290 <sup>1</sup>
With	31	39.7	47	60.3	
Without	47	32.6	97	67.4	
<b>Abdominal circumference</b>					0.803 <sup>1</sup>
Altered	24	36.4	42	63.6	
Normal	54	34.6	102	65.4	
<b>Waist-height Relation</b>					0.210 <sup>1</sup>
Altered	36	40.0	54	60.0	
Normal	42	31.8	90	68.2	
<b>Arterial pressure</b>					0.147 <sup>2</sup>
Altered	2	15.4	11	84.6	
Normal	76	36.4	133	63.6	

<sup>1</sup> Chi-square Test; <sup>2</sup>Exact test of Fisher



## Chart 2

Association between the classification of sleep hours of children and children's health. Brazil, 2018.

Variables	Hours of sleep				P-value
	Inadequate	Adequate			
<b>Eating in front of the TV</b>					0.150 <sup>1</sup>
Yes	52	32.3	109	67.7	
No	26	42.6	35	57.4	
<b>Internet at home</b>					0.563 <sup>1</sup>
Yes	38	33.3	76	66.7	
No	40	37.0	68	63.0	
<b>Hours facing a screen</b>					<b>0.024<sup>1</sup></b>
< 2 hours	19	51.4	18	48.6	
> 2 hours	59	31.9	126	68.1	
<b>Possession of tablet or cell phone</b>					0.902 <sup>1</sup>
Yes	53	34.9	99	65.1	
No	25	35.7	45	64.3	
<b>TV or computer in the sleeping place</b>					0.439 <sup>1</sup>
Yes	31	32.3	65	67.7	
No	47	37.3	79	62.7	
<b>Active or sedentary lifestyle</b>					0.484 <sup>1</sup>
Active	33	37.9	54	62.1	
Sedentary	45	33.3	90	66.7	
<b>Neck circumference</b>					0.210 <sup>1</sup>
Yes	36	40.0	54	60.0	
No	42	31.8	90	68.2	
<b>Bedwetting</b>					0.070 <sup>1</sup>
Yes	16	25.8	46	74.2	
No	62	38.8	98	61.3	
<b>Defined hour to sleep</b>					0.544 <sup>1</sup>
Yes	53	36.6	92	63.4	
No	25	32.5	52	67.5	
<b>Report of disease</b>					<b>0.018<sup>1</sup></b>
Yes	15	55.6	12	44.4	
No	63	32.3	132	67.7	
<b>Accepts school meals</b>					0.244 <sup>1</sup>
Yes	60	33.3	120	66.7	
No	18	42.9	24	57.1	
<b>Eats before going to school</b>					0.683 <sup>1</sup>
Yes	72	34.8	135	65.2	
No	6	40.0	9	60.0	
<b>Meals completed with supervision</b>					0.728 <sup>1</sup>
Yes	71	34.8	133	65.2	
No	7	38.9	11	61.1	
<b>Practices physical activities during free time</b>					0.755 <sup>1</sup>
Yes	40	34.2	77	65.8	
No	38	36.2	67	63.8	

<sup>1</sup> Chi-square Test; <sup>2</sup>Exact test of Fisher

## Chart 3

Association between the classification of the children's sleep hours and variables related to the caregiver. Brazil, 2018.

Variables	Child's hours of sleep				P-Value
	Inadequate	Adequate			
<b>Caregiver's sleep quality<sup>3</sup></b>					0.561 <sup>2</sup>
Good quality	40	32.5	83	67.5	
Poor quality	35	39.3	54	60.7	
Presence of disturbances	3	30.0	7	70.0	
<b>Caregivers daily drowsiness<sup>4</sup></b>					1.000 <sup>2</sup>
No	66	35.3	121	64.7	
Yes	12	34.3	23	65.7	
<b>Genitor</b>					0.577 <sup>1</sup>
Mother	64	36.0	114	64.0	
Father	10	37.0	17	63.0	
<b>Caregiver's kinship</b>					0.607 <sup>1</sup>
Grandparents/uncles	4	23.5	13	76.5	
Mother	64	36.0	114	64.0	
Others	14	31.8	30	68.2	
<b>Caregiver goes to work</b>					<b>0.048<sup>1</sup></b>
Yes	33	44.0	42	56.0	
No	45	30.6	102	69.4	
<b>Caregiver reports insomnia</b>					0.110 <sup>1</sup>
Yes	25	43.9	32	56.1	
No	53	32.1	112	67.9	
<b>Caregiver reports disease</b>					0.329 <sup>1</sup>
Yes	18	30.0	42	70.0	
No	60	37.0	102	63.0	
<b>Caregiver uses medication to sleep</b>					0.729 <sup>1</sup>
Yes	15	37.5	25	62.5	
No	63	34.6	119	65.4	
<b>Caregiver uses other medications</b>					0.954 <sup>1</sup>
Yes	23	34.8	43	65.2	
No	55	35.3	101	64.7	
<b>Caregiver evaluation of the child's sleep quality</b>					0.227 <sup>2</sup>
Very poor	2	25.0	6	75.0	
Poor	22	47.8	24	52.2	
Good	31	33.7	61	66.3	
Very good	23	30.3	53	69.7	

<sup>1</sup> Chi-square test; <sup>2</sup> Exact test of Fisher; <sup>3</sup> Pittsburgh Sleep Quality Index;

<sup>4</sup> Epworth's classification

- The child studies during the morning period ( $p < 0.001$ ): participants with this feature exceeded by 139% the cases of inadequate sleeping hours if compared to the ones that studied during the evening period (this can also be interpreted as 2.39 times bigger).