

# Sedentary Behaviors Of A School Population In Brazil And Related Factors Descriptive Research With Questionnaire

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## Research

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# Abstract

**Background** Overweight and obesity arise from a complex range of genetic, environmental, behavioural, educational, and socioeconomic factors. Poor eating habits and poor physical activity increase the probability that children will become obese adolescents. The sedentary lifestyle, encouraged by the rapid evolution of technology, has been accentuated in recent years. Strategies to accelerate obesity prevention include modifying the child's environment for healthy eating and physical activity. For this, it is essential to analyze the characteristics and life habits of children population. This study tries to know the sedentary practices and some life habits related to health among children from the school population of Urugaiana (RS, Brazil), identifying the sociodemographic factors that can influence it.

**Methods** The sample was composed of 470 school boys and girls, aged between 9 and 10 years. In order to obtain the sample, a random sampling was performed by clusters of the 24 urban public schools of the city. Sociodemographic variables and sedentary habits were measured.

**Results** As regards the variables linked to habits, 24% of the boys and girls answered they had not had breakfast the day they completed the questionnaire. 51.8% stated they did not have breakfast any given day of the week. Regarding to sedentary habits, 25.3% of children watched TV or played video games 5 or more hours a day and 9% rarely played sports with their parents or caregivers. Statistical significance was recorded between “number of hours watching TV and playing video games” and “playing sports with parents or caregivers” ( $p < 0.05$ ).

**Conclusions** Association between the times spent watching TV or playing video games and the practice of physical exercise in the family, proves once again the importance of the family in education for the health of children. The school provides direct Access to schoolchildren and their parents to launch numerous health education programs.

## Background

According to the World Health Organization, childhood obesity is a Public Health problem, whose prevalence has increased in recent years [1]. If current trends continue, in 2022 there will be more children with obesity than with underweight [2]. Overweight and obesity in children cause significant impacts on the physical and mental health of children, with a tendency towards obesity in adulthood and suffering from non-communicable diseases such as diabetes and cardiovascular diseases [3, 4] In Latin America, it is estimated that between 42.4 and 51.8 million children and adolescents are overweight or obese, representing 20 to 25% of the total population of children and adolescents [5]. Specifically in Brazil, one third of children population between 5 to 9 years old is overweight [6].

Overweight and obesity arise from a complex range of genetic, environmental, behavioural, educational, and socioeconomic factors. Poor eating habits and poor physical activity increase the probability that children will become obese adolescents [7]. The sedentary lifestyle, encouraged by the rapid evolution of technology, has been accentuated in recent years [8]. Life habits have been modified especially in

children, who have adopted behaviours that predispose to minimal energy expenditure, close to a quiescent condition. Children spend many hours in front of television, playing video games or managing social networks from their mobile phones [9]. According to a survey carried out in Brazil, entitled National Student Health Survey, the prevalence of adolescents exposed to at least two hours a day of television is 78% [10].

There is scientific evidence highlighting the association between the number of hours that television is viewed and the omission of important meals of the day such as breakfast, and also with the consumption of hypercaloric foods, high in sugars, carbohydrates and saturated fats [4, 11]. The omission of breakfast has also been linked to a higher body mass index and an increase in leisure time in sedentary activities [12]. One of the strategies to control obesity in Brazil is through the National Food and Nutrition Policy (PNAN), updated by Ordinance No. 2,715 / 2011, which aims to improve the diet, nutrition and health conditions of Brazilian population, through actions in order to promote adequate and healthy eating practices, food and nutritional surveillance, especially the prevention of health problems related to an inadequate diet [13].

Strategies to accelerate obesity prevention include modifying the child's environment for healthy eating and physical activity [14]. For this, it is essential to analyze the characteristics and life habits of children population. This study tries to know the sedentary practices and some life habits related to health among children from the school population of Uruguaiiana (RS, Brazil), identifying the sociodemographic factors that can influence it. The main hypothesis of the study is that the exercise with the family reduces the hours of exposure to television and video games in children.

## Methods

A cross-sectional descriptive study was conducted to characterize the life habits of the school boys and girls from 4th grade (9–10 years old) in the city of Uruguaiiana (Rio Grande do Sul, Brazil). In order to obtain the sample, a random sampling was performed by clusters of the 24 urban public schools of the city. In the random selection of clusters, 12 schools were included with a total of 558 4th grade boys and girls enrolled, so as to guarantee a minimum sampling size of 264 boys and girls in 11 clusters, considering an acceptable marginal error of 5% and a confidence level of 95%.

A transcultural adaptation was conducted of the abridged questionnaire of Eating Habits of the School Population of the “PERSEO” program, by the Spanish Society of Community Nutrition, validated in the Spanish population [15]. A draft was sent to three social scientists and experts in this area that are external to the research team. They performed a review of the translated questionnaire, considering aspects such as item comprehension (both questions and possible answers) in relation to the objectives of the research. The items related to sedentary habits were selected. Questions include single, multiple, and open answers that are grouped in different variables:

- Sociodemographic variables: age, gender, family situation, the parents' working situation and their type occupation, according to the Brazilian classification of occupations [16].

- Variables of sedentary habits: number of hours watching television, videos or playing videogames, television watching frequency during lunch or dinner, sports activities with parents.

The questionnaire was applied to the selected sample in 12 schools. The headships of all the selected school centres were contacted. The data collection day and time were scheduled and the boys' and girls' parents were asked to sign the informed consent. Two educated researchers, accompanied by the teacher of the group, explained the instructions to complete the questionnaire to the children and clarified any doubt. To record and analyse the data, a questionnaire was written in the specific tool from the EpiInfo application, version 7.2.1.0. This tool was also employed to perform the statistical analysis.

The frequency distributions of the main qualitative variables were calculated in the descriptive analysis, as well as the measurements of central tendency and dispersion of the quantitative variables. For the hypothesis contrast, the Chi-square test or Fisher's exact test and Student's t test were used, as it suits the case. The accepted statistical significance level for the hypothesis contrast was set at  $p < 0.05$ .

The research obtained documentary authorization from the Regional Coordinating Office for Education of Rio Grande do Sul and from the Research Ethics Committee of the University of Unipampa. During the whole process of data collection, children's anonymity was guaranteed and the ethical principles for medical research in human beings described in the latest revision of the Declaration of Helsinki were applied [17].

## Results

A total of 470 4th grade boys and girls (9–10 years old) participated in the study, according to the distribution of the participating centres of the city shown in Table 1. Of the total of participants, 46% were boys ( $n = 196$ ; 95% CI [41.3–50.7]) and 54% were girls ( $n = 230$ ; 95% CI [49.2–58.6]) and the mean age of the participating children was 9.8 years old (SD = 0.74). 38% ( $n = 173$ ; 95% CI [33.7–42.5]) were children from the morning group, 56.7% ( $n = 258$ ; 95% CI [52.1–61.2]) were from the afternoon group, and 5.3% ( $n = 24$ ; 95% CI [3.6–7.7]) were from the integrative group (morning and afternoon shifts). 99.6% of the children were Brazilian ( $n = 468$ ; 95% CI [98.4–99.8]). 64.2% of the children (95% CI [64.2–92.9]) stated they lived with their parents all the time, whereas the rest had different family situations.

Table 1  
Sample distribution by participating centers

CENTER	N (Enrolled Students)	N (Participating Students in the simple)	% over the total sample	IC 95%
Escola Estadual de Ensino Médio "Dom Hermeto"	140	125	27,41%	[23, 5–31, 6]
Instituto Estadual de Educação "Elisa Ferrari Valls"	19	15	3,29%	[2,0–5,3]
Escola Estadual de Ensino Fundamental "Adir Mascia"	73	64	14,04%	[11, 1–17, 5]
Escola Estadual de Ensino Fundamental "Antonio Mary Ulrich"	32	24	5,26%	[3, 5–7, 7]
Escola Estadual de Ensino Fundamental "Iris Valls"	34	30	6,58%	[4, 6–9, 2]
Escola Estadual de Ensino Fundamental "Paso de Los Libres"	26	23	5,04%	[3, 3–7, 4]
Instituto Estadual "Romaguera Correa"	20	17	3,73%	[2, 3–5, 9]
Escola Estadual de Ensino Fundamental "Hermeto Jose Pinto Bermudez"	51	37	8,11%	[5, 9–10, 9]
Escola Estadual de Ensino Médio "Senador Salgado Filho"	26	23	5,04%	[3, 3–7, 4]
Escola Estadual de Ensino Médio "Professora Lilia Guimaraes"	54	42	9,21%	[6, 8–12, 2]
Colégio Estadual "Dr Roberval Beheregaray Azevedo"	46	32	7,02%	[5,0–9,7]
Escola Estadual de Ensino Médio "Embaixador Joao Baptista Lusardo"	37	24	5,26%	[3, 5–7, 7]
Total	558	456	100,00%	

The mean number of brothers/sisters reported by the children was 2.07 (SD = 1.48). 83.5% (95% CI [79.8–86.6]) of the children stated that their father worked, and 63.7% (95% CI [59.2–68.0]) that their mother also worked. The main occupation of 51.4% (95% CI [46.2–56.7]) of the mothers who worked was in the area of services and in retail sales in stores or supermarkets. 77.1% of the fathers (95% CI [68.1–82.3]) shared this same occupation. The main sociodemographic and characteristics descriptive results of the sample are summarized in Table 2.

Table 2  
Sociodemographic and characteristics of the sample

<b>Variables</b>	<b>n</b>	<b>Media</b>	<b>Standard Deviation</b>	
Age (years)	423	9,8	0,74	
Number of brothers or sisters	318	2,07	1,48	
<b>Qualitative variables</b>	<b>Categories</b>	<b>n</b>	<b>%</b>	<b>IC 95%</b>
Sex	Women	230	54,0	[49,2–58,6]
	Mens	196	46,0	[41,3–50,7]
Class	Morning class	173	38,0	[33,7–42,5]
	Afternoon class	258	56,7	[52,1–61,2]
	Integral class	24	5,3	[3, 6–7, 7]
Nationality	Brasil	468	99,6	[98,4–99,8]
	Others (Argentina, Uruguay)	2	0,4	[0,04 – 1,2]
Family living situation	Alone with the mother	77	17,6	[14, 3–21, 5]
	Alone with the father	19	4,3	[2,8 – 6,7]
	With the mother and her new partner	20	4,6	[2,9 – 6,9]
	With the father and his new partner	9	2,06	[1,0–3,8]
	With father and mother	280	64,2	[59,6–68,5]
	With other adults	31	7,1	[5,0–9,9]
Does your father work?	Yes, he works	375	83,5	[79,8–86,6]

Variables	n	Media	Standard Deviation
	He doesn't work	30	6,7 [4, 7-9, 4]
	I don't know	22	4,9 [3, 2-7, 3]
	I haven't contact with my father	22	4,9 [3, 2-7, 3]
Type of father's occupation	0 Armed forces, Police, fire and military	1	0,2 [-0,21 - 0,6]
	1 Senior members of the government, managers of public interest organizations and companies and managers	1	0,2 [-0,21 - 0,6]
	2 Science and arts professionals	8	1,8 [1,5 - 2,3]
	3 Level technicians	11	2,4 [1-3, 8]
	4 Administrative service workers	25	5,6 [3, 4-7, 6]
	5 Service workers, retail salespeople in stores and markets	199	44,2 [39,6-48,8]
	6 Agricultural, forestry, hunting and fishing workers	0	0,0 [0,0-0,0]
	7 Industrial and service production workers	6	1,3 [0,3 - 2,4]
	8 Maintenance and repair workers	3	0,7 [-0,1-1,4]
Does your mother work?	Yes, she works	288	63,7 [57,9-66,9]
	She doesn't work	144	31,8 [27, 7-36, 3]
	I don't know	14	3,1 [1,5 - 4,7]
	I haven't contact with my mother	6	1,3 [0,3 - 2,4]
Type of mother's occupation	0 Armed forces, Police, fire and military	10	2,2 [0,8 - 3,6]

Variables	n	Media	Standard Deviation
1 Senior members of the government, managers of public interest organizations and companies and managers	3	0,7	[0,1–1,4]
2 Science and arts professionals	5	1,1	[0,1–2,1]
3 Level technicians	12	2,7	[1, 2–4, 1]
4 Administrative service workers	25	5,6	[3, 4–7, 7]
5 Service workers, retail salespeople in stores and markets	175	38,9	[34,4–43,4]
6 Agricultural, forestry, hunting and fishing workers	18	4,0	[2, 2–5, 8]
7 Industrial and service production workers	41	9,1	[6, 4–11, 8]
8 Maintenance and repair workers	49	10,9	[8,0–13,8]

As regards the variables linked to habits, referred to in Table 3, **24%** (95% CI [18.8–28.2]) of the boys and girls answered they had not had breakfast the day they completed the questionnaire. 34.9% (95% CI [30.5–39.3]) who have breakfast had taken milk, eaten legumes, dried fruits or eggs, 24.4% (95% CI [20.5–28.4]) fruits or natural fruit juices, and 10.4% (95% CI [7.6–13.3]) bread, rice or potatoes, 6.9% (95% CI [4.5–9.3]) cold meats and processed foods and 3.1% (95% CI [1.5–4.7]) candies, pastries or salted snacks. With respect to the frequency of weekly breakfast 51.8% (95% CI [47.1–56.4]) stated they did not have breakfast any given day of the week. 49.3% (95% CI [44.7–54.0]) had breakfast every day with their mother or father and 14.2% (95% CI [10.9–17.5]) never had breakfast with their mother/father. Regarding to sedentary habits, 25.3% (95% CI [21.4–29.3]) of children watched TV or played video games 5 or more hours a day, 55.3% (95% CI [50.8–59.8]) watched TV at lunch and dinner and 9,1% (95% CI [6.8–11.8]) rarely played sports with their parents or caregivers.

Table 3  
Habits of the sample

Variables	Categories	n	%	IC 95%
Have you had breakfast today in the morning (before coming to school)?	Yes	342	76,0	[72,5–79,5]
	No	108	24,0	[18,8–28,2]
Breakfast classification	Sweets, pastries and salty snacks	14	3,1	[1,50–4,7]
	Red, processed and cold meats	31	6,9	[4,5–9,3]
	Milk, lean meats, legumes, nuts, eggs	157	34,9	[30,5–39,3]
	Vegetables and fruits	110	24,4	[20,5–28,4]
	Bread, pasta, rice, potatoes	47	10,4	[7,6–13,3]
How often do you have breakfast with your mother and/or your father?	Everyday	222	49,3	[44,7–54,0]
	4–6 days per week	29	6,4	[4,2–8,7]
	1–3 days per week	66	14,7	[11,4–17,9]
	Less than once a week	50	11,1	[8,2–14,0]
	Never	64	14,2	[10,9–17,5]
How many days a week do you have breakfast?	Everyday	81	18,0	[14,4–21,6]
	5–6 days per week	81	18,0	[14,4–21,6]
	1–4 days per week	31	6,9	[4,5–9,2]

Variables	Categories	n	%	IC 95%
	None	233	51,8	[47,1–56,4]
How many hours a day you watch television, videos or do you play video games?	None	47	10,0	[7.3–12.7]
	1 hour/day	145	30,9	[26.6–35.1]
	2 hours/day	56	11,9	[8.9–14.8]
	3 hours/day	44	9,4	[6.7–12]
	4 hours/day	39	8,3	[5.8–10.8]
	5 or more hours/day	119	25,3	[21.4–29.3]
How often do you watch television at lunch or dinner at home?	Everyday	260	55,3	[50.8–59.8]
	4–6 days/week	41	8,7	[6.1–11.3]
	1–3 days/week	64	13,6	[10.5–16.7]
	Less than 1 day/week	80	17,0	[13.6–20.4]
	Never	0	0,0	[0,0]
Do you usually do sports with your mother, father or with a caregiver or relative?	Yes, most days	174	37,0	[32.6–41.4]
	Sometimes	139	29,6	[25.4–33.7]
	Only on weekends	34	7,2	[4.9–9.6]
	Rarely	43	9,1	[6.8–11.8]
	Never	0	0,0	[0,0]

The results related to the hypothesis contrast, obtained with the Chi-square test, are presented in Table 4. The variable “number of hours watching TV and playing video games” became a dichotomous variable: less than 2 hours and 2 or more hours watching TV or playing videogames. In comparison with other variables (sex, family situation, parents’ works and breakfast habits), only statistical significance was

recorded with two variables. There was a significant difference between number of hours watching TV and playing video games and sex ( $p < 0.05$ ) and playing sports with parents or caregivers ( $p < 0.05$ ).

Table 4  
Contingency table using the chi-squared test

	Frequency Watch television, videos or play video games (Less than 2 hours/ 2 or more hours) N (%)	Statistical Value Pearson's chi-squared	Level of Significance
Sex	<p><i>Males</i></p> <p>97 (50.3%)</p> <p>96 (49.7%)</p> <hr/> <p><i>Women</i></p> <p>132 (58.1%)</p> <p>95 (41.9%)</p>	12,531	p = 0.028*
Family living situation	<p><i>Alone with the mother</i></p> <p>40 (53.3%)</p> <p>35 (46.7%)</p> <hr/> <p><i>Alone with the father</i></p> <p>14 (73.4%)</p> <p>5 (26.3%)</p> <hr/> <p><i>With the mother and her new partner</i></p> <p>11 (55%)</p> <p>9 (45%)</p> <hr/> <p><i>With the father and his new partner</i></p> <p>3 (33.3%)</p> <p>6 (66.6%)</p> <hr/> <p><i>With father and mother</i></p> <p>151 (54.5%)</p> <p>126 (45.5%)</p> <hr/> <p><i>With other adults</i></p> <p>17 (56.7%)</p> <p>13 (43.3%)</p>	4.527	p = 0.476

	Frequency Watch television, videos or play video games (Less than 2 hours/ 2 or more hours) N (%)	Statistical Value Pearson's chi-squared	Level of Significance
Does your father work?	<p><i>Yes, he works</i></p> <p>198 (53.4%)</p> <p>173 (46.6%)</p> <hr/> <p><i>He doesn't work</i></p> <p>17 (56.7%)</p> <p>13 (43.3%)</p> <hr/> <p><i>I don't know</i></p> <p>13 (61.9%)</p> <p>8 (38.1%)</p> <hr/> <p><i>I haven't contact with my father</i></p> <p>14 (66.6%)</p> <p>7 (33.3%)</p>	1.964	p = 0.580
Does your mother work?	<p><i>Yes, she works</i></p> <p>163 (57.2%)</p> <p>122 (42.8%)</p> <hr/> <p><i>She doesn't work</i></p> <p>70 (49%)</p> <p>73 (51%)</p> <hr/> <p><i>I don't know</i></p> <p>7 (58.3%)</p> <p>5 (41.7%)</p> <hr/> <p><i>I haven't contact with my mother</i></p> <p>4 (80%)</p> <p>1 (20%)</p>	3.977	p = 0.264

	Frequency Watch television, videos or play video games (Less than 2 hours/ 2 or more hours) N (%)	Statistical Value Pearson's chi-squared	Level of Significance
Breakfast frequency with parents	<i>Everyday</i> 124 (56.4%) 96 (43.6%) <hr/> <i>4-6 days per week</i> 22 (66.7%) 11 (33.3%) <hr/> <i>1-3 days per week</i> 38 (56.7%) 29 (43.3%) <hr/> <i>Less than once a week</i> 32 (61.5%) 20 (38.5%) <hr/> <i>Never</i> 27 (42.2%) 37 (57.8%)	7.131	p = 0.129
How many days a week do you have breakfast	<i>Everyday</i> 128 (53.8%) 110 (46.2%) <hr/> <i>5-6 days/week</i> 18(54.5%) 15 (45.5%) <hr/> <i>1-4 days/week</i> 46(56.8%) 35 (43.2%)	0.270	p = 0.966

	Frequency Watch television, videos or play video games (Less than 2 hours/ 2 or more hours) N (%)	Statistical Value Pearson's chi-squared	Level of Significance
	<i>None</i> 42(53.2%) 37 (46.8%)		
Breakfast classification	<i>Sweets, pastries and salty snacks</i> 8(57.1%) 6(42.9%) <hr/> <i>Red, processed and cold meats</i> 17(54.8%) 14(45.2%) <hr/> <i>Milk, lean meats, legumes, nuts, eggs</i> 87(55.4%) 70(44.6%) <hr/> <i>Vegetables and fruits</i> 62(56.4%) 48(43.6%) <hr/> <i>Bread, pasta, rice, potatoes</i> 28(57.1%) 21(42.9%)	0.78	p = 0.999
Watch television at lunch or dinner	<i>Everyday</i> 147(56.5%) 113(43.5%) <hr/> <i>4-6 days/week</i> 23(56.1%) 18(43.9%) <hr/>	1.118	p = 0.773

	Frequency Watch television, videos or play video games (Less than 2 hours/ 2 or more hours) N (%)	Statistical Value Pearson's chi-squared	Level of Significance
	<i>1-3 days/week</i> 31(49.2%) 32(50.8%)		
	<hr/> <i>Less than 1 day/week</i> 44(55%) 36(45%)		
	<hr/> <i>Never</i> 0(0%)		
Sports with mother, father or others relatives	<i>Yes, most days</i> 96(55.5%) 77(44.5%)	35.208	p = 0,019*
	<hr/> <i>Sometimes</i> 85(61.6%) 53 (38.4%)		
	<hr/> <i>Only on weekends</i> 17(50%) 17(50%)		
	<hr/> <i>Rarely</i> 16(37.2%) 27(62.8%)		
	<hr/> <i>Never</i> 31(52.5%) 28(47.5%)		

## Discussion

In the present study, a descriptive analysis of the data was carried out and various sociodemographic hypotheses were tested, as well as dietary habits and sedentary habits compared to the number of hours they watched television and / or played video games. The National Student Health Survey, carried out in Brazil, showed that 78% of adolescents were exposed to at least two hours a day of television [10]. In our study, the population was school aged between 9 and 10 years and the percentage of boys and girls who watched television or played video games at least 2 hours a day was 55%.

Stahlmann et al observed that children from single-parent families reported longer hours of television consumption ( $p < 0.001$ ) [18]. In our study, no significant difference was observed in this regard ( $p = 0.476$ ). However, the highest percentage of boys and girls who watched television over two hours was represented by those who lived with their father and a new partner (66.6%), followed by those who lived alone with their mother (46.7%).

There is scientific evidence linking the number of hours that children spend watching television with the omission of important meals during the day such as breakfast<sup>11</sup>. Specifically, in our study, no significant differences were obtained between the number of hours watching television and the weekly frequency of breakfast. However, it was found that almost half of children, who do not have breakfast, use to watch television or play video games during over two hours a day.

In this study, only 18% of boys and girls had breakfast every day of the week, a low rate compared to other studies carried out in Argentina [19], Spain [20] and Canada [21], where 75%, 77.5% and 85.5%, respectively, had breakfast daily. However, in the study carried out in Spain [20], 5.2% had fresh juices or whole fruits for breakfast; on the contrary in our study, this breakfast was taken by 24.4%. In the study carried out in Argentina<sup>19</sup>, 16% had a low-quality breakfast, based on industrial pastries and sugary foodstuffs, while in Italy [22], 31.3% of children had this type of breakfast. By comparison, among Uruguiana schoolchildren, only 3.1% had industrial pastries or sugary foodstuffs for breakfast. This was particularly noteworthy so we can conclude that there were fewer children who used to have the habit of a daily breakfast but those who did, ate a healthier breakfast, mainly based on milk, bread, eggs and fruit or fresh fruit juices. The problem in this case was the lack of the breakfast habit, which may be related to educational and socioeconomic factors due to scarcity of resources.

In previous studies, watching television was associated with a higher intake of “fast food”, foodstuffs and foods rich in saturated fat, refined sugar, food colours and preservatives [23, 24, 25]. Overexposure to television and video games, in addition to leading a sedentary lifestyle, exposes children to the advertising of unhealthy products [26, 27]. In this study, no statistical significance was obtained between the number of hours spending watching television or playing video games and the type of breakfast that children used to have.

Statistical significance was obtained between the time spent watching television or playing video games and the frequency practising sports activities or physical exercise with their parents or other caregivers. This finding is similar to other ones found in previous studies, in which the important role of the family

appears to be related to sedentary behaviours of children [28, 29, 30, 31]. In fact, parents' lifestyle habits are the main predictors of the time spent watching television by schoolchildren [32, 33, 34]. Bjelland et al. concluded that parental support and also their teaching and accompaniment in physical exercise decreased the time spent watching television or playing video games among European children [35, 36, 37, 38].

Another of the determining factors related to television and video game consumption is age and gender [39, 40]. Regarding age, no differences were observed in this study, because there was hardly any variability, but on the other hand, there was a significant association between the times spent watching television and gender. Boys were more likely to watch over two hours on television or playing video games during the day than girls, as around 60% of them watched television during less than two hours a day.

## Limitations

The intention of this study was to evaluate the sedentary behaviours of schoolchildren and their correlation with various sociodemographic and lifestyle factors. Children were asked to fill in the data related to his/her weight and height in order to determine their body mass index. There was a very low response rate because children uncovered these data. The body mass index could have been compared to sedentary habits, if we had had a higher response rate. Therefore, as a proposal for improvement for the next study, it is recommended personally size and weigh the children. It is also intended to include parents to expand the variables, as well as to contrast the information reported by the scholars.

## Conclusion

In this study, an important finding was obtained, the association between the times spent watching television or playing video game and the practice of physical exercise in the family. Once again the importance of the family in education for the health of children is highlighted. The school environment provides direct access to schoolchildren and their parents to launch numerous health education programs based on physical exercise and a healthy diet.

## Declarations

### **Ethics approval and consent to participate**

The research obtained documentary authorization from the Regional Coordinating Office for Education of Rio Grande do Sul and from the Research Ethics Committee of the University of Unipampa. During the whole process of data collection, children's anonymity was guaranteed and the ethical principles for medical research in human beings described in the latest revision of the Declaration of Helsinki were applied.

### **Consent for publication**

Not applicable.

### **Availability of data and materials**

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

### **Competing interests**

The authors declare that they have no competing interests.

### **Funding**

Not applicable.

### **Authors' contributions**

All persons listed as authors have a thorough domain of the final manuscript, are able to defend its conclusions and have performed the following tasks. JAPB, JML and DRV participated in the conception and design of the study and drafted the first version of it. RRC, MEDV and JAPB participated in the development of the study and analysis of data. JML and JMRR revised critically the draft of the manuscript, with a key intellectual contribution to the final version. MEDV and DRV participated in the data collection and next to JAPB and RRC they made the final version of the manuscript.

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## Figures

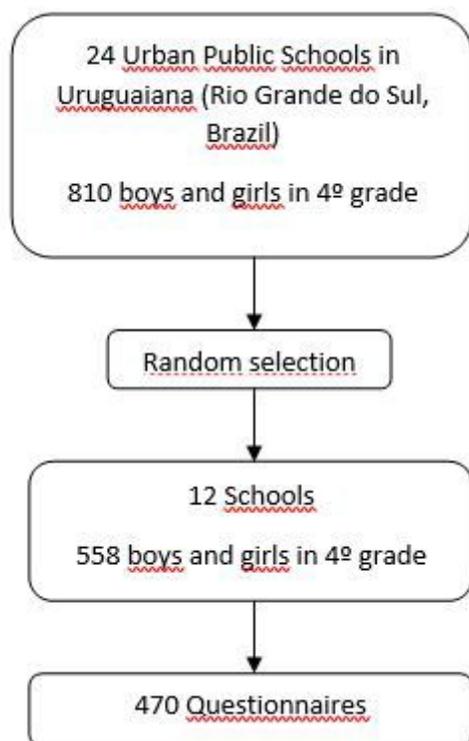


Figure 1

Sampling

## Supplementary Files

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