

ORIGINAL ARTICLE

Behavior in children and adolescents associated to screen time in Porto Velho, Brazilian Western Amazon

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Abstract

Introduction: In studies directed to children and adolescents, the sedentary behavior has been usually represented by exposure to screen, which comprise the total or separate measured time exposed to television, videogame, tablets, mobile devices, and computer.

Objective: To analyze the prevalence and factors associated with screen time in children and adolescents.

Methods: A cross-sectional school-based study was carried out with 1,471 students from Elementary School, aged between 7 to 18 years (51.3% male), enrolled at public schools (55.6%) in Porto Velho, Rondônia (RO) state, Brazil. Excess screen time was defined as watching television, using the computer, and playing video games for more than two hours per day. Poisson regression was used to obtain crude and adjusted prevalence ratios and their respective 95% CI.

Results: Overall prevalence of screen time exposure over two hours per day was 65.9%. After adjustments, risk of screen time exposure was higher in males, PR = 1.51 (95% CI: 1.08 - 1.92), under or equal to 14 years old, PR = 1.69 (95% CI: 1.48 - 1.92), in the 5th grade, PR = 1.41 (95% CI: 1.02 - 1.89), in the 6th grade, PR = 1.44 (95% CI: 1.06 - 1.97) and in the 7th grade, PR = 1.52 (95% CI: 1.09 - 2.13), attending two weekly PE classes or fewer, PR = 1.25 (95% CI: 1.07 - 1.53), consuming more than 3 daily meals, PR = 2.69 (95% CI: 2.14 - 3.37) and overweight, PR = 1.51 (95% CI: 1.13 - 2.03).

Conclusion: The findings showed that the exposure equal to or more than two hours of daily screen time was high. The students more exposed to this outcome had the next characteristics: male sex, age less than or equal to 14 years, from the fifth, sixth, and seventh grade of elementary education, practice physical education classes less than or equal to two hours per week, consume more than three meals daily and have excess body fat (G%).

Keywords: child, adolescent, screen time, school.

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Authors summary

Why was this study done?

There is a lack of information on the prevalence of adolescents from the northern region of Brazil with excessive exposure to sedentary behavior, especially for the screen time, their distribution in the sociodemographic strata, and its association with excess body weight and level of physical activity. Thus, this study aims to investigate the factors associated with screen time in children and adolescents in the city of Porto Velho, Rondonia State (RO), Western Amazonia.

What did the researchers do and find?

It was done a cross-sectional school-based study with 1,471 students from Elementary School.

The prevalence of screen time exposure over two hours per day was 65.9%. The study provides evidence that the limit of up to two hours of screen time recommended by the American Academy of Pediatrics, the World Health Organization, is not being met.

What do these findings mean?

As a promoter of health, the school, through its professionals and the development of public policies, may have a determinant role in combatting these adolescents' permanence in sedentary behavior, concomitantly with the domestic environment influence of parents.

INTRODUCTION

Sedentary behavior is characterized by sitting or lying activities with low energetic expenditure. Screen time has been often used to evaluate sedentary behavior; it is defined as the time children and adolescents spend on electronic equipment (television sets, videogames, computers, tablets, and smartphones)¹⁻⁶.

Children and adolescents are advised to use electronic equipment for up to two hours per day². However, most parents and persons with parental responsibility do not adhere to screen time guidelines³ for their children. Scientific literature has reported that children and adolescents extrapolate by watching television, using computers, tablets, and smartphones, playing videogames, and connecting to the social network⁴⁻⁶.

Screen time may harm children's and adolescents' physical and psychosocial health⁵. Some of them are increasing the risk of developing sedentary behavior, early signs of diseases related to metabolic syndromes (obesity and arterial hypertension, high cholesterol, triglycerides, and glycemia), and low levels of bone minerals, low self-esteem, and problems related to depression⁷. Evidence suggests if sedentary behavior starts at a young age tends to continue along with people's life cycles⁸.

There is a lack of information on the prevalence of adolescents from the Brazil northern region concerning excessive screen time, this study aimed to investigate the prevalence and factors associated with screening time in children and adolescents in Porto Velho, Rondônia State, western Amazon region, Brazil.

METHODS

It is a cross-sectional study that was carried out in a school located in Porto Velho, Rondonia State, Western Amazon, Brazil. This city has an estimated population of 511,210 inhabitants, its Human Development Index (HDI) was 0.736 in 2016⁹. The Research Ethics Committee approved this study with Human Beings at the Universidade Federal de Rondônia (UNIR) (CAAE no.14190113.30000.5300, report no. 431.027).

The population's characterization was based on school data collected in 2016 and provided by the State Education Department (SEDUC/RO). There were 52,169 students of both genders, aged between 7 to 18 years old, attending Elementary School.

A 50% prevalence of screen time over two hours per day was used to determine sample size. Taking a sample error of two percentage points with a 95% confidence interval (CI), the design effect (deff) equal to 2 and 20% to compensate losses and refusals. As a result, the sample consisted of 1,471 students.

A 3-step conglomerate carried out the selection process. In the first stage, 84 Elementary Schools were systematically selected and proportionally distributed in size (number of enrolled students), types of school (public and private ones), and city areas (northern, southern, eastern, and western). Afterward, 205 groups were randomly selected and distributed in morning and afternoon classes, besides Elementary School (from the 5th to the 9th grade).

Data were collected from March to June 2016. The team in charge was composed of three teachers and six students who belonged to the PIBIC/CNPq/UNIR 2015/2016. They had been previously trained to carry out the anthropometric evaluation and apply the questionnaire to students in their classes, in their teachers' presence.

Excess screen time was operationalized by measuring mean daily time (hours/minutes) spent by students watching television, playing videogames, and using computers on working days and weekends during a typical week. The following procedure calculated the mean: summation of time spent in sedentary behavior on weekdays (from Monday to Friday) multiplied by five and added to the time spent on weekends (Saturday or Sunday) multiplied by two. This result was divided by seven to obtain the mean number of hours per day adolescents spent on-screen activities.

Excess screen time was defined as exhibiting this behavior for more than two hours per day¹⁰. Screen time measure had satisfactory levels of reproducibility (continuous measure [hours/day] - CCI=0.76p<0.01; categorical measure [≤ 2 hours/day vs. >2 hours/day] - =0.52). The question: do you often participate in Physical Education (PE) classes in school? a) never, once or twice a week; or b) more than twice a week. Students could only choose an answer to verify the time spent in physical activity at school.

The body mass index (zBMI) was calculated with the formula $BMI = \text{weight (kg)}/\text{height (m}^2\text{)}$. The proposal of the World Health Organization (WHO) was used as its criterion as follows; cut-off points were $zBMI < 1.0$ (stable weight) and $zBMI > 1.0$ (excess weight = overweight & obese)¹¹. Fat percentage (%F) was calculated by equations proposed by Slaughter *et al.*¹² based on the following cut-off points for excess fat in males and females: ≥ 20 mm and ≥ 25 mm¹³, respectively.

The other variables included in the questionnaire were: sex (male and female); age, which was classified into two groups (equal or under 14 years old and over 14 years old); economic class (A + B = upper and middle + upper, C + D = middle and E = low-middle)¹⁴; schooling (from the 1st to the 9th grade); and food consumption in front of the screen (fewer or equal to three daily meals and more than three daily meals).

Data were analyzed by the Stata software program, version 11.0 (StataCorp), and the survey command was used to consider the effect of the sample design. Absolute and relative frequencies were analyzed to represent the study sample. The outcome was dichotomized in screen time exposure over two hours per day. Categorical variables were described as ratios with their respective 95% CI. First, the prevalence of screen time over two

hours per day were analyzed by the Chi-square Test for heterogeneity. Poisson Regression was conducted to obtain crude and adjusted Prevalence Ratios (PR) and their 95% CI. The authors constructed a three level hierarchical model in the adjusted analysis: Level 1 comprised sociodemographic variables, *e.g.*, sex, age, schooling, and daily meal consumption, level 2 composed of behavioral variables, *i.e.*, classes in school and daily meal consumption. The Level 3 consisted of the zBMI and % F. Variables were adjusted to the same level and the upper-level ones. All variables were included in the adjusted analysis and backward selection; the ones whose values were $-p < 0.20$ were kept.

RESULTS

The mean age was 12.58 ± 1.86 (9.0 – 17.0) years old; it was 12.66 ± 1.85 among males and 12.49 ± 1.86 among females. The general prevalence of exposure to screen time over two hours per day was 65.9%. The highest prevalences of screen time related to electrical and electronic devices were watching television (55.8%) and using the computer (50.9%) for more than two hours per day, followed by interaction in the social networking website Facebook and use of the instant messaging application What's App (81.2%) (figure 1).

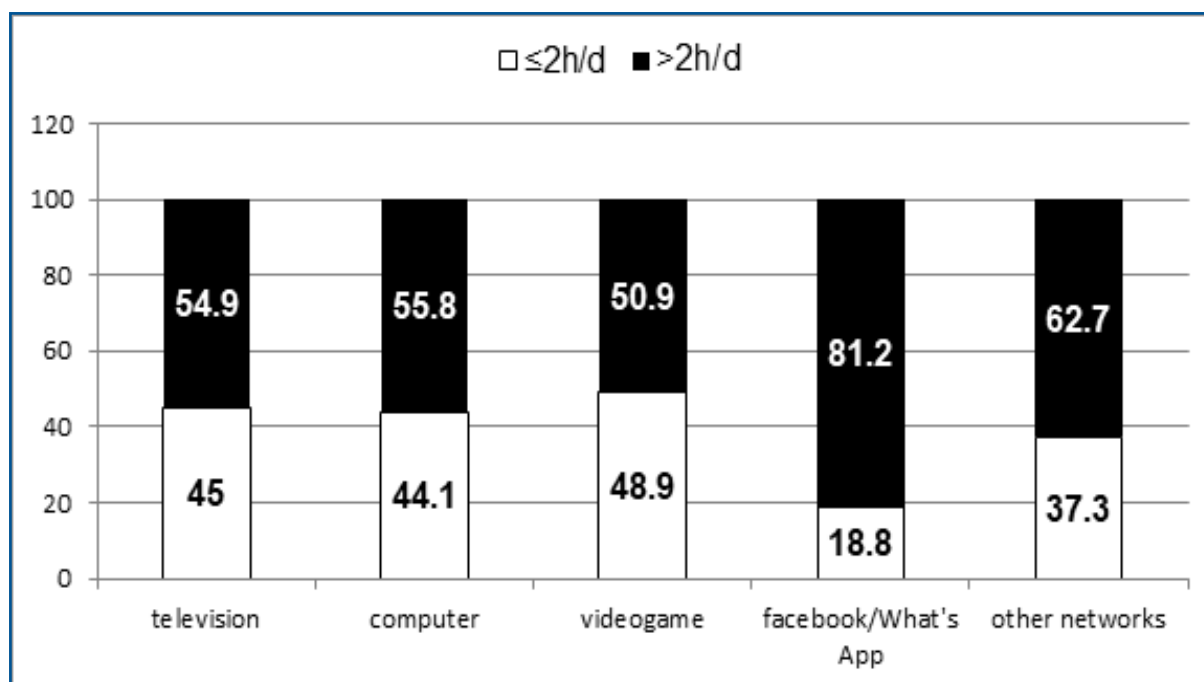


Figure 1: Prevalences (%) of screen time and social networks (> 2 hours per day) of children and adolescents in elementary school. Porto Velho, RO, Brazil, 2016.

Table 1 shows the characteristics of the sample and the prevalence of exposure to screen time over two hours, based on the variables public school (55.6%), males (51.3%), under or equal to 14 years old (72.1%), in the 6th grade (27.4%), economic classes C, D, and E (53.1%), participation in Physical Education classes for fewer than or equal to two hours per day (81.6%), consumption of fewer than or equal to three meals per day (53.8%), adequate weight (69.5%), with no excess fat (57.9%).

Prevalence of exposure to screen time was higher among private school students (67.6%), males (66.6%), under or equal to 14 years old (66.9%), in the 6th grade (68.5%), economic classes C, D, and E (65.9%). They participate in physical education less than two daily hours per week (66.2%), consume more than three meals daily (77.3%), overweight (68.5%), and excess fat (70.8%) (table 1).

Table 1: Prevalence of screen time over two hours per day, related to the following variables: sociodemographic, behavioral and of body composition of children and adolescents in elementary school. Porto Velho, RO, Brazil, 2016.

Characteristics	% screen time > 2 h per day			p*
	n (%)	n (%)	CI 95%	
School				0.019
Public	818 (55.6)	527 (64.4)	61.2 – 67.6	
Private	652 (44.4)	441 (67.6)	64.4 – 70.7	
Sex				0.037
Male	754 (51.3)	502 (66.6)	62.8 – 69.7	
Female	716 (48.7)	466 (65.1)	61.9 – 68.2	
Age				0.020
≤14 years old	1060 (72.1)	709 (66.9)		
>14 years old	410 (27.9)	259 (63.2)		
Schooling (grades)				0.048
5th	320 (21.8)	193 (60.3)	57.1 – 63.4	
6th	403 (27.4)	276 (68.5)	65.3 – 72.0	
7th	297 (20.2)	207 (14.1)	11.0 – 17.2	
8th	231 (15.7)	144 (9.8)	6.6 – 13.1	
9th	219 (14.9)	148 (10.1)	6.9 – 13.2	
Economic class				0.491
A + B	689 (46.9)	453 (65.7)	62.5 – 69.0	
C + D and E	781 (53.1)	515 (65.9)	63.0 – 69.1	
Physical Ed. classes				0.047
≤2 classes per week	1200 (81.6)	794 (66.2)	63.0 – 69.4	
>2 classes per week	270 (18.4)	174 (64.4)	61.2 – 67.6	
Meal consumption in front of screens				<0.001
≤3 meals per day	791 (53.8)	443 (56.0)	52.8 – 59.2	
>3 meals per day	679 (46.2)	525 (77.3)	74.1 – 80.5	
zBMI				0.017
Adequate weight	1022 (69.5)	661 (64.7)	61.5 – 68.0	
Excess weight	448 (30.5)	307 (68.5)	65.3 – 72.0	
% fat				<0.001
Without excess fat	851 (57.9)	530 (62.3)	59.1 – 65.4	
With excess fat	619 (42.1)	438 (70.8)	67.6 – 74.0	

* Chi-square Test for heterogeneity.

Table 2 describes the crude and adjusted prevalence of screen time over two hours per day related to independent variables. After adjustments, risk of screen time exposure was higher in males, PR = 1.51 (95% CI: 1.08 - 1.92), under or equal to 14 years old, PR = 1.69 (95% CI: 1.48 - 1.92), in the 5th grade, PR = 1.41 (95% CI: 1.02 - 1.89), in the 6th grade, PR = 1.44 (95% CI: 1.06 - 1.97) and in the 7th grade, PR = 1.52 (95% CI: 1.09 - 2.13), attending two physical education E classes per week or less, PR = 1.25 (95% CI: 1.07 - 1.53), consuming more than 3 daily meals, PR = 2.69 (95% CI: 2.14 - 3.37) and overweight, PR = 1.51 (95% CI: 1.13 - 2.03).

DISCUSSION

The screen time ratio over two hours observed in this group of children and adolescents was high (65.9%). This data is consistent with findings of national^{3,5-7,15} and international^{16,17} studies. Factors associated with risk of screen time exposure over two hours per day were: being a male between 11 and 14 years of age, attending the 7th grade in Elementary School, participating in PE classes either few times or twice a week, consuming more than three meals per day and having excess body fat.

Table 2: Hierarchical multiple logistic regression for the following variables: sociodemographic (Level 1), behavioral (Level 2) and of body composition (zBMI and %F) (Level 3) of high screen time exposure among students in elementary schools. Porto Velho, RO, Brazil, 2016

Variables	Screen time exposure (> 2 h per day)					
	PR ^{crude}	(CI95%)	p ^b	PR ^{adjusted}	CI 95%	p ^b
Level 1						
Sex			<0.001			0.023
Male	1.86	(1.41 – 2.11)		1.51	(1.08 – 1.92)	
Female	1					
Age			0.020			0.011
≤14 years old	1.73	(1.52 – 1.96)		1.69	(1.48 – 1.92)	
>14 years old	1			1		
Schooling (grades)			0.015 ^c			0.022 ^c
5th	1.43	(1.05 – 1.94)		1.41	(1.02 – 1.89)	
6th	1.51	(1.08 – 2.11)		1.44	(1.06 – 1.97)	
7th	1.50	(1.06 – 2.08)		1.52	(1.09 – 2.13)	
8th	1.38	(0.97 – 1.99)		1.37	(0.95 – 1.96)	
9th	1			1		
Economic classes			0.938			0.586
A + B	1.01	(0.81 – 1.25)		1.06	(0.84 – 1.35)	
C + D and E	1					
Level 2						
PE classes			0.003			0.008
≤2 classes per week	1.36	(1.12 – 1.66)		1.25	(1.07 – 1.53)	
>2 classes per week	1			1		
Meal consumption in front of screens			<0.001			<0.001
≤3 meals per day	1			1		
>3 meals per day	2.67	(2.13 – 3.36)		2.69	(2.14 – 3.37)	
Level 3						
zBMI			0.143			0.376
Without excess weight	1			1		
With excess weight	1.18	(0.94 – 1.50)		0.89	(0.65 – 1.21)	
% fat						
Without excess fat	1		0.001	1		0.002
With excess fat	1.41	(1.17 – 1.83)		1.51	(1.13 – 2.03)	

a Variables of adjusted model by hierarchical levels with $p < 0.20$.

b Wald test for heterogeneity.

c Wald test for linear trend.

This current study revealed the association between risk of screen time over two hours per day and males, which was also reported by other studies of specialized literature^{3,16-18}. A logical explanation for this phenomenon may be that boys spend more time in front of their computers and videogames. However, both boys and girls also invest considerable time in the social network, listening to music, and reading on the internet on a computer, tablet, and smartphone screens^{19,20}.

Divergences found in the literature regarding the association between sex and screen time may be related to discrepancies among different cut-off points used to

categorize sedentary behavior due to the use of electrical and electronic devices. Systematic reviews^{6,8} evidenced that prevalences resulting from the use of a cut-off point of two hours, or over, of television time, for instance, were higher among males than females, while derivatives of cut-off points of four hours, or over, were higher among females^{7,18}.

Ages under or equal to 14 years old exhibited the highest risk of screen time exposure, which corroborates findings of several national^{3,7,15,21} and international^{17,20,22} studies. Younger adolescents (pre-adolescents) gradually show more probability to exceed daily screen time than

older adolescents, *i. e.*, over 14 years old. The risk of exceeding two hours per day was PR=1.69 (CI95% 1.48 – 1.92). Our findings also highlight that the older the adolescents, the less time they spend watching television since there is a concomitant exponential increase in their use of tablets and smartphones. It also happens to children since teachers have increasingly been dealing with children who own mobile devices.

This situation may be associated with the fact that older adolescents (> 14 years old) start to take over other responsibilities, such as jobs to help increase their families' incomes and more study hours due to school evaluations (8th and 9th grades) besides little interest in television. Therefore, older adolescents get involved in other daily activities that limit their screen time.

Another phenomenon pointed out by this current research is that adolescents gradually tend to stay more time at home due to an exacerbated increase in violence and overprotective parenting. The consequence of this social phenomenon is that parents allow their children to make more use of emergent technologies, such as television, tablets, and smartphones.

Thus, children end up spending more time on electronic games, social networks, and instant messaging applications, enabling their parents to feel comfortable. Parents do not have to release and stimulate their children to engage in outdoor recreational and physical activities. One of the consequences of this behavior – that has become common in Brazilian families – is that screen time exposure exceeds two hours per day. The screen time recommended by the American Academy of Pediatrics is under or equal to two hours per day^{2,6,15,16,23}.

In the present study, children and adolescents enrolled in the 5th, sixth and seventh grades (60.3%, 68.5%, and 14.1%) showed a higher prevalence of exposure to the screen time equal or higher to two hours daily, and in the adjusted analysis were associated with the outcome ($p=0.02$).

A study²² conducted in Canada corroborates with the present study showing that students enrolled in elementary school (5th to 8th grade) are more exposed to screen time than students from higher grades. The study of Wang *et al.*²³ showed that, by the progress of the school grades, the screen decreases, by several factors: commitment to school evaluation, tasks at home, work to help the family budget, and social relationships.

Complementing the above, families (parents or guardians), from the 8th grade (± 14 years), already begin to demand more responsibility and commitment with the homework concerning work and school evaluations, regardless of the education network. The author²³ points out that, in well-structured families, with parents and/or guardians participating in the school life of their children, the control of exposure of screen time associated to the degrees of education and school performance is inversely associated with more significant exposure time forward to the screen^{22,24}.

Other factors may explain the involvement of parents in contributing in this period at school, to facilitate their children screen time as insecurity with violence, lack of safe places for the practice of physical activity,

motorized travel to school, induce the adolescent to spend more time doing sedentary activities^{4,6,7,18}.

Our study also revealed the association between screen time under or equal to two hours per day and participation in PE classes in school. This finding may show that electronic media may be replacing everyday physical activities since Elementary School children think they are more interesting than PE classes, which may be getting less attractive and leading to students' lack of interest^{25,26}.

Brazilian public and private schools offer one, two, or, sometimes, three 40-50-minute PE classes per week. They teach all classes together in only a weekly period. By doing so, they do not meet the minimum requirements of physical activity recommended by the Brazilian law (Leis de Diretrizes e Base da Educação –LDB), by the World Health Organization, and the American College of Sports Medicine.

Therefore, PE gives a small contribution to schools to make students carry out physical activities in terms of schedule. Studies conducted in several countries show that from 13.7%²⁷ to 56.0%²⁸ adolescents practice physical activities according to updated guidelines²⁹. In Brazil, data collected by the National Student Health Survey on 9th graders in public and private schools show that only 43.1% are sufficiently active³⁰.

The use of emerging technologies³¹ over two hours/day is associated with outcomes of high prevalence and odds of no participation in PE classes. Studies of children and adolescents from Brazil identified high odds ratio of sedentary behavior exposure and no participation in PE classes in adolescents who stay over two hours in front of electrical and electronic devices, such as television sets, computers, notebooks, tablets, and smartphones.

National^{3,5,7} and international^{4,8} studies showed the odds of adolescents being classified into "little active" or "rarely participates in PE classes" is directly related to the use of television sets and computers, associated with social networks, over two hours per day.

The Kaiser Family Foundation published a report of electronic media and family in 2006. This institution carried out a study with 1,051 parents and found that most children, from six years on, spent more than two hours per day in screen time (81%) and consumed more than three daily meals. During the time in front of tv sets, computers, smartphones, and video games, they consume hypercaloric food, such as snacks, soft drinks, and cookies^{32,33}. In this current study the group of students with higher screen time exposure consumed more than three meals daily.

Most children and adolescents live in homes that have become increasingly locked due to families' sense of insecurity resulting from increased violence in Brazil. Another Brazilian cultural aspect, which is eating while watching television, should be considered. A mother stated the following: "We usually watch TV while we have lunch. The child thinks that people only eat in front of the TV". It makes us wonder about the influence it has on the quality of the food people eat. The consequence in adult life is the increase in the consumption of food that contributes not only to trigger several diseases related to systemic arterial hypertension and diabetes mellitus but also to increase

obesity and sedentarism indexes, besides diseases related to metabolic syndromes in young children^{6,7,16,18,21}.

Screen time over two hours per day showed participants' risk of 1.51 ($p= 0.002$) of excess body fat, a fact that consistently corroborates findings of other cross-sectional studies^{3,6,21} and longitudinal ones^{17,24,25} while confirming the hypothesis that screen time is positively associated with body composition^{34,35}.

Other studies⁵⁻⁸ highlight behavioral traces of young people who use devices for exaggerated screen time, reduce daily physical activity, and increase the consumption of unhealthy food giving evidence of the association between excess screen time and excess body fat^{16,18,35}. D'Avila *et al.*³² concluded that screen time over 28 hours per week was significantly associated with excess fat percentage. They observed that adolescents who stay longer than recommended in front of the television, computer, and/or mobile phone screens have an inadequate lifestyle.

Schools with adequate environments stimulate children and adolescents to have a dynamic behavior. It is safe equipment and adequate spaces, supported by pedagogues and physical educators.

Even though our study corroborates several national and international ones and shows consistent indicators of students' screen time in the context of the Western Amazon region in Brazil, it has some limitations that should be considered. First, the design of a cross-sectional prevents any causality among variables under investigation. The questionnaire was self-reported and may underestimate or overestimate values that correspond to the study variables, rather than being objectively measured, a fact that may increase the risk of information bias.

On the other side, this study brought some strong points as follows: it reached a high response index, standardized procedures by the collection team, and the inclusion of students from public and private schools from different economic classes in distinct areas in Porto Velho, RO.

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■ CONCLUSION

The findings showed that the exposure equal to or greater than two hours of daily screen time was high (65%). The children and adolescents with highest screen time have the next characteristics: male, less than or equal to 14 years old, from the fifth, sixth and seventh grades of elementary school, practice physical education less than or equal to two hours per week, consume more than three meals daily and have excess body fat (G%).

Based on the findings, the guidance to reduce excessive screen time behavior is recommended as a function of health damage. The school and family are the most conducive environments for guidance and control to the fight against excessive screen time to reduce sedentary behaviors.

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The authors claim to have a registered and updated curriculum at CNPq's Lattes Platform.

Conflict of interest

"Nothing to declare."

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Contribution of authors for the study

Edson dos Santos Farias responsible for the project, participated in all planning, analysis, and interpretation of data, execution, preparation of the manuscript, and final writing. Wellington Roberto Gomes de Carvalho has contributed to the data analysis and review of the literature. Josivana Bridges of the Saints participated in the data analysis, execution, manuscript preparation and final writing.

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Resumo

Introdução: Em estudos direcionados a crianças e adolescentes, o comportamento sedentário tem sido usualmente representado pela exposição aos comportamentos de tela, que compreendem as medidas (unificadas ou distintas) do tempo de televisão, videogame, tablets, aparelhos celulares e computador.

Objetivo: Investigar a prevalência e os fatores associados ao tempo de tela em crianças e adolescentes.

Método: Estudo transversal de base escolar, com 1471 escolares de 9 a 18 anos, sendo 51,3% do sexo masculino pertencentes às escolas públicas (55,6%) do ensino fundamental de Porto Velho, Rondônia. O tempo excessivo de tela foi definido como assistir televisão, usar o computador e jogar videogames por mais de duas horas diárias. Análise utilizada foi regressão de Poisson para obtenção das razões de prevalências brutas e ajustadas e seus respectivos IC95%.

Resultados: A prevalência geral de exposição de tempo de tela maior que duas horas diárias foi de 65,9%. Após ajustes, o risco à exposição de tempo de tela foi maior no sexo masculino RP = 1,51 (IC95%: 1,08 – 1,92), idade menor ou igual a 14 anos RP = 1,69 (IC95%: 1,48 – 1,92), grau de ensino 5^a ano RP=1,41 (IC95%: 1,02 – 1,89), 6^a ano RP=1,44 (IC95%: 1,06 – 1,97) e 7^a ano RP = 1,52 (IC95%: 1,09 – 2,13), frequentar as aulas de educação física menos ou igual a duas aulas semanais RP = 1,25 (IC95%:1,07 – 1,53), consumir refeições diárias mais de três por dia RP = 2,69 (IC95%:2,14 – 3,37) e ter excesso de gordura RP = 1,51 (IC95%: 1,13 – 2,03).

Conclusão: Os resultados mostraram que a exposição igual ou superior a duas horas de tela diária era alta. Os estudantes mais expostos a este desfecho tiveram as seguintes características: sexo masculino, idade menor ou igual a 14 anos, de quinta, sexta e sétima série do ensino fundamental, praticar aulas de educação física menor ou igual a duas horas semanais, consumir mais de três refeições diárias e estar com excesso de gordura corporal (G%).

Palavras-chave: criança, adolescente, tempo de tela, escola.

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