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ORIGINAL ARTICLE

Associations between Screen Time and Factors Related to Dental Caries in Children: A Cross-Sectional Study

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ABSTRACT

Objective: To evaluate the association of screen time (ST) and unhealthy food consumption (UFC) with dental caries in children. Associations between ST or UFC and socioeconomic/demographic factors were also performed. **Material and Methods:** Children (n=47) between 2 and 12 years were included and examined for caries experience (dmft/DMFT index). Socioeconomic, demographic, ST (TV + computer time), and UFC were data collected through interviews. ST was compared between children with dmft ≤2 or >2. Multiple regression models evaluated associations between socioeconomic/demographic factors and TV/computer times/UFC. **Results:** Children's ST was 5.35±2.01 h/day, 51.1% had UFC >4 times/day, 53.2% showed dmft ≤2 and 87.5% DMFT=0. Mothers were the primary caregivers (78.7%), who presented as less than having completed high school level (76.1%) and having low socioeconomic status (SES) (51.1%). No difference between ST of children with dmft >2 (5.91±1.92h/day) and those with dmft ≤2 (4.86±2.00h/day) was observed (p=0.07). Children from low SES watched TV more than 2h/day (p=0.01), and those whose mothers had lower education levels presented the highest UFC (p=0.03). Most children with UFC >4 times/day stayed longer in front of a computer (p=0.013). **Conclusion:** Although screen time and unhealthy food consumption were not associated with caries, children staying for a long time in front of a computer presented the highest unhealthy food consumption. Also, mothers' lower socioeconomic status and higher educational levels influenced children to watch TV for a long time and eat a poor diet, respectively.

Keywords: Dental Caries; Screen Time; Child; Diet; Social Class.

Introduction

Children's use of screens such as TV, computers, video games, television, and mobile devices has increased in the last decades. However, the American Academy of Pediatrics (AAP) recommends up to two hours daily for children over 5 years old [1-3]. This increase was influenced by the restriction orders and social distancing protocols imposed by the recent COVID-19 pandemic, which impacted children's physical, mental, and oral health [1].

Studies have shown an association between screen time (ST) and behavioral factors such as a sedentary lifestyle, language delays, sleep disturbances, and unhealthy dietary habits [1,4]. The literature also suggests that longer ST is a risk factor for poor eating habits in children since those who spend more time in front of screens tend to consume more snacks and less fruit and vegetables [1,4,5]. Therefore, high consumption of unhealthy foods is strongly related to lower socioeconomic status (SES) and the development of dental caries lesions [5-7].

SES also influences ST since it was observed that both lower-income families and parents' schooling levels had been linked to extended periods of ST [8,9]. However, these studies [8,9] were predominantly conducted in countries with socioeconomic and cultural realities distinct from Brazil, where factors such as income disparity, educational access, and digital inclusion may differ. Thus, it emphasizes the importance of studying these factors in Brazilian populations to provide insights that reflect the country's specific cultural and socioeconomic context. Therefore, the present study aims to evaluate the association of screen time (ST) and unhealthy food consumption (UFC) with the experience of dental caries in children. Additionally, the potential influence of socioeconomic and demographic factors on ST and UFC will be investigated. We hypothesize that ST is associated with a higher dental caries experience and a higher frequency of UFC by children.

Material and Methods

Study Design and Ethical Aspects

This cross-sectional study was conducted at the Universidade Federal do Rio de Janeiro pediatric dental clinics between September and November 2023. The study adhered to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines [10]. It was approved by the Ethics Committee of the *Universidade Federal do Rio de Janeiro* (Opinion no. 5.654.081) according to Resolution 466/2012 of the Brazilian National Health Council.

Eligibility Criteria and Sample

The sample size was determined based on the availability of children attending the dental clinic during the study period; thus, a non-probabilistic sampling method was adopted. Therefore, children aged 2 to 12 who attended pediatric dental clinics during the data collection period were included. Children with cognitive or motor disabilities, systemic illnesses, or whose caregivers could not answer the questionnaire were excluded. The caries index analysis also excluded children with teeth affected by enamel defects or orthodontic devices.

Training and Calibration

The examiner (KC) training for the DMFT/dmft index occurred through the clinical examination of 3 patients in the pediatric dental clinics of the Universidade Federal do Rio de Janeiro, with a subsequent theoretical discussion about the index components. This discussion occurred immediately after the examinations, supervised by an experienced researcher (AF). After this clinical-theoretical stage, the examiner (KC) started the

calibration phase with children (n = 10) at different ages, with deciduous and permanent teeth with caries lesions in various stages. The examiner (KC) and a previously calibrated professional (GFR) independently performed the clinical examinations. After brushing and drying the teeth with compressed air, with the children seated in a dental chair under artificial light, the clinical exams were performed using a rounded tip probe and a #5 flat mouth mirror. These children were not included in the main sample of the study. The analyses of the inter-examiner agreement involved the Kappa coefficient with quadratic weighting for the DMFT/dmft indexes. Thus, the inter-examiner agreement value observed by comparing the examination results of each professional was Kappa=0.888.

Data Collection

Children attending the pediatric dental clinics were examined using the decayed, missing, and filled teeth (DMFT) caries index for permanent teeth and the dmft index for deciduous teeth [11]. Data collection included questionnaires administered through interviews with caregivers regarding screen time (ST), the daily frequency of unhealthy food consumption (UFC), and socioeconomic and demographic factors.

General data were collected through interviews by a single examiner (KC) with the children's caregivers. The family's socioeconomic status (SES) was classified using the Standard Criterion of Economic Classification Brazil [12], reflecting purchasing power and providing a standardized method for socioeconomic comparisons in health studies. Then, their socioeconomic strata were categorized into upper (A), middle (B1 and B2), and lower classes (C1, C2, D, and E) according to Vollú et al. [13]. Sociodemographic information such as gender, age, race/color, the primary caregiver, and the caregiver's education level were the data obtained. In addition, behavioral characteristics such as the frequency of brushing, consumption of sugary drinks and/or sweets and cookies between meals, and food intake between the last brushing and bedtime were also collected.

The UFC frequency was investigated using an adapted instrument recommended by the Brazilian Ministry of Health. The instrument consisted of two specific food items, which evaluated the number of times an individual consumed unhealthy food weekly on a scale from 0 to 7 [14,15]. The questions were about the consumption of (a) sweets or sandwiches, cookies, candies, and chocolates (in bars or candy) and (b) regular soft drinks. The results of UFC were classified as a smaller (≤ 4 times/day) or a higher (> 4 times/day) frequency, based on a previous study [16].

Regarding the ST of the study population, we applied the US Youth Risk Behavior Surveillance System (YRBSS) questionnaire [17], which was adapted to Portuguese. This instrument independently collects data on TV time and computer/tablets/smartphones (computer time), excluding time spent on school activities.

Clinical examinations of children and adolescents to assess caries experience were conducted by a single examiner (KC) using the DMFT/dmft index [11]. The exam followed the same protocol described in the training and calibration step.

Data Analysis

The magnitude of hours/day was considered to calculate the mean TV and computer screen time. First, the number of hours spent with TV or computer from Monday to Friday was multiplied by 5, and the number of hours spent on the weekend (Saturday and Sunday) was multiplied by 2. Then, each time (TV or computer), considering week and weekend was added and divided by 7, obtaining the average of TV or computer time per day, individually. After that, both values were added to get the total screen time, considering the sum of TV and computer times [18].

The American Academy of Pediatrics (AAP) recommendations for screen time were used as parameters for analysis, considering the average age of the population studied. For children aged 2 to 5 years, screen use should not exceed 1 hour/day. In comparison, for children over 6 years, the limit recommended to use the screen is less than 2 hours/day, which was classified as regular (less than 2 hours/day) or above the limit time recommended (more than 2 hours/day) [2,3].

All data were entered into SPSS software version 21.0 (SPSS Inc., Chicago, USA) and analyzed descriptively using absolute frequencies, percentages, median, and means with respective standard deviations. Missing responses were identified in some variables where caregivers could not answer specific questions. These missing values were excluded from the respective analyses to ensure the accuracy and validity of the results, and the adjusted sample sizes are indicated in the tables.

The mean total screen time (TV + computer) was compared between children with lower (dmft ≤ 2) or higher (dmft >2) caries experience in deciduous teeth, according to the median results, using the Student t test, after verifying the normality of the data using the Shapiro-Wilk test. The chi-square test was used to associate (1) TV time and computer time with UFC (≤ or > 4 times/day) and (2) UFC (≤ or > 4 times/day) with lower or higher dmft.

A binary logistic regression model of hierarchical type was performed to associate dependent variables: TV time (regular or above 2h/day) and UFC (≤ 4 times/day; > 4 times/day) with the following independent modifying variables: SES (low or moderate/high), the number of siblings in the same household (0 or ≥ 1), mother's education level (complete high school or less; more than complete high school) and type of caregiver (parents or others). Variables were included individually, where only those with a significance level of $p < 0.20$ [19] were kept in the final model. The prevalence ratio (PR) was demonstrated in the regression models, and the established significance level was 5% for all analyses.

Results

Of the 47 children included in the study, the majority were female (53.2%), with a mean age of 6.49 (±2.45) years (range: 2–12 years), from the lower class (51.1%), and most were not an only child (38.3%). The principal caregiver was the mother (78.7%), with a mean age of 33.94 (±6.17) years and 11.89 (±3.29) years of school education. Most did not complete levels other than high school (76.1%). The mean dmft score was 3.40 (±3.56), and the mean DMFT score was 0.19 (±0.53). As for the total ST, the sample had an average of 5.35 (±2.01) hours/day, where 2.47 (±1.45) h/day have been spent watching TV and 2.89 (±1.54) h/day on the computer. The description of the variables that characterize the sample is shown in Table 1.

Table 1. Socioeconomic, demographic and behavioral characteristics.

Variables	N	%
Gender of Child		
Female	25	53.2
Male	22	46.8
Race/Color		
White	16	34.0
Brown	29	61.7
Black	2	4.3
Number of Siblings in the Same House		
No siblings	18	38.3
≥ 1 siblings	29	61.7
Socioeconomic Status		
Upper class	2	4.3

Middle class	21	44.7
Lower class	24	51.1
Main Caregiver		
Parents	41	87.2
Others	6	12.8
Mother's Schooling		
Complete high school or less	35	76.1
More than complete high school	11	23.9
Brushing Frequency/Day		
≤ 2 times	25	53.2
> 2 times	22	46.8
Food Intake Between the Last Brushing and Bedtime		
No	30	63.8
Yes	17	36.2
Ingestion of Sugary Liquids During the Day		
No	5	10.6
Yes	42	89.4
Eating Sweets or Cookies Between Meals		
No	4	8.5
Yes	43	91.5
The Frequency of Daily Consumption of Unhealthy Food		
≤ 4 times/day	23	48.9
> 4 times/day	24	51.1
Hours/Day Watching TV as AAP Recommendation		
≤ 2h/day	20	42.6
> 2h/day	27	57.4
Hours/Day at the Computer as AAP Recommendation		
≤ 2h/day	26	55.3
> 2h/day	21	44.7
dfmt		
≤ 2	25	53.2
> 2	22	46.8
DFMT		
= 0	28	87.5
> 0	4	12.5

AAP: American Academy of Pediatrics; dfmt: Carious, extracted/lost due to caries, and filled teeth in deciduous dentition; DMFT: Carious, extracted/lost, and filled teeth in permanent dentition.

Children with dmft higher than 2 spent 5.91±1.92h/day watching TV and/or using computers, and children with dmft lower than or equal to 2 spent 4.86±2.00h/day in front of screens (p=0.07). Considering the evaluation of TV time and computer time separately, children who spent more time on computers consumed more unhealthy foods than those with less computer time (p=0.013). However, TV time was not associated with the consumption of unhealthy foods (p=0.562) (Table 2). No difference was observed between children with dmft > or ≤ 2 and UFC frequency (p=0.8).

Table 2. Association of the daily consumption of unhealthy foods (UFC) with computer and TV time considering the American Association of Pediatrics recommendation.

Variables	Daily Consumption of Unhealthy Foods		p-value
	> 4 Times/Day N (%)	≤ 4 Times/Day N (%)	
Computer Time			
≤ 2h/day	9 (19.1)	17 (36.2)	0.013*
> 2h/day	15 (31.9)	6 (12.8)	
TV Time			
≤ 2h/day	13 (27.7)	12 (25.5)	0.562
> 2h/day	11 (23.4)	11 (23.4)	

*Statistically significant.

Binary regression analysis showed no association between watching TV for more time with the number of siblings and the mother's schooling. Therefore, the regression model eliminated the variables with p<0.20 (Table 3). The final regression model observed that SES influenced the children's TV time. Belonging to the lower class is related to children watching TV for over 2 hours/day (PR=4.965; 95%CI=1.319-18.686; p=0.018) (Table 4). Furthermore, the regression performed regarding the UFC frequency (Table 5) with the same independent variables showed no association with the number of siblings (p=0.537), and, in the final model, children whose mothers have a higher level of education are six times more likely to eat unhealthy food (PR=6.239; 95%CI=1.122-34.703; p=0.037) (Table 6).

Table 3. Values were obtained from binary logistic regression for the selection of variables (p<0.20), considering socioeconomic and demographic-related factors to TV time (dependent variable).

Variables	N	Prevalence Ratio	Confidence Interval (95%)	p-value
Socioeconomic Status	46			
Lower class(1)	24	7.840	1.576–38.999	0.021*
Upper and Middle class	22			
Caregiver Type	46			
Parents(1)	41	0.472	0.054–4.140	0.498
Others	5			
Mother's education	46			
Complete high school or less(1)	35	2.243	0.363–13.846	0.384
More than complete high school	11			
Number of siblings in the same house	46			
No siblings(1)	18	0.381	0.092–1.571	0.182*
≥ 1 siblings	28			

(1): Reference value; *p<0.20.

Table 4. Variables maintained in the final regression model for TV time (dependent variable).

Variables	N	Prevalence Ratio	Confidence Interval (95%)	p-value
Socioeconomic Status	46			
Lower class(1)	24			
Upper and Middle class	22	4.965	1.139–18.686	0.018*
Number of siblings in the same house	46			
No siblings(1)	18	0.369	0.094–1.445	0.152
≥ 1 siblings	28			

(1): Reference value; *p<0.05.

Table 5. Values obtained from binary logistic regression for selection of variables (p<0.20), considering socioeconomic and demographic-related factors to UFC (dependent variable).

Variables	N	Prevalence Ratio	Confidence Interval (95%)	p-value
Socioeconomic Status	46			
Lower class(1)	24	0.311	0.072–1.341	0.117*
Upper and Middle class	22			
Caregiver Type	46			
Parents(1)	41	7.427	0.498–110.780	0.146*
Others	5			
Mother's education	46			
Complete high school or less	35			
More than complete high school(1)	11	6.691	1.180–37.948	0.032*
Number of siblings in the same house	46			
No siblings(1)	18	0.660	0.176–2.475	0.537
≥ 1 siblings	28			

(1): Reference value; *p<0.20; UFC: Daily frequency of consumption of unhealthy foods.

Table 6. Variables maintained in the final regression model for UFC (dependent variable).

Variables	N	Prevalence Ratio	Confidence Interval (95%)	p-value
Socioeconomic Status	46			
Lower class(1)	24	0.337	0.080–1.412	0.137
Upper and Middle class	22			
Caregiver Type	46			
Parents(1)	41	6.556	0.483–89.061	0.158
Others	5			
Mother's Education	46			
Complete high school or less	35			
More than complete high school(1)	11	6.239	1.122–34.703	0.037*

(1): Reference value; *p<0.05; UFC: Daily frequency of consumption of unhealthy foods.

Discussion

In the present study, our results showed no association between ST and different caries experiences in children; in addition, no association between dental caries and the high consumption of unhealthy foods was observed. Thus, our hypotheses were rejected. However, it is essential to mention that other studies found a statistically significant association between the presence of caries lesions and the use of screens for a long time [5]. Moreover, usually, there is a higher consumption of sugary foods and beverages between meals or close to bedtime and, during these moments, these children could be in front of screens, since we saw that children who spend more time in front of computers also ate more of these foods. Thus, further studies with a large sample size are necessary to elucidate this issue.

When observing the screen time of the present sample, it was found that the mean screen time of the participants is much higher than that recommended by the AAP [2,3], corroborating with the findings of other authors [20,21]. Furthermore, in relation to screen time, the questionnaire adapted by Herman et al. [22] was still used in this study. Another version of this questionnaire, previously validated by Schmitz et al. [23], presents different questions about screen time, divided between the school period and the children's break period [22,23]. Thus, these questions could generate bias and imprecision about screen time since the break period is not every day, which could not reproduce the child's actual routine. Therefore, accounting for weekdays and weekends instead of school hours and recesses was the sensible option adopted by the present authors. Schmitz et al. [23], in their own study of validation, mentioned that comprehensive assessments may require weekday and weekend measurements.

One issue worth mentioning is the adoption of TV time and computer time reference values, as recommended by AAP in the analyses, of two hours per day [3]. Although children aged from 2 years were included in the present study, the participants' mean age (6.49±2.45) contributed to the adoption of the AAP recommendation of no more than 2 hours/day of screen time for children over 6 years of age [2,3].

Children from lower socioeconomic status were five times more likely to watch TV for more than 2 hours/day, consistent with previous findings [8,20]. This association can be attributed to factors such as sedentary lifestyles and parents' difficulty regulating screen time in resource-limited settings [8]. Financial constraints may also limit access to alternative recreational activities, positioning television as an accessible form of entertainment. These results highlight the need for a holistic approach in pediatric dental care, where dentists address oral health and broader aspects of child development, including the impact of digital habits on overall well-being. Understanding the complex interactions between SES, screen time, and dietary behaviors is crucial for developing effective interventions that improve short- and long-term health outcomes.

Considering children's consumption of unhealthy foods, an association was found between the higher mother's education level and UFC higher than 4 times/day, which was different from other studies [8,9]. The present authors suggest that mothers with more years of education probably work outside their homes, spending more time away from their children. Consequently, to compensate for this absence during the day, they can rely on processed food or unsupervised child feeding, and the children tend to have unhealthy behaviors, choosing less healthy foods and watching more television [24].

Although the mean caries index for permanent teeth was lower than the national mean [25] and different from that reported by other authors [5,26], it is believed that this fact is related to the mean age of the children studied, since there are more deciduous teeth than permanent teeth in the population included in this sample. Furthermore, this fact also influenced the choice of the dmft as a parameter of children's caries experience since the index for deciduous teeth was higher than the average.

The present research had limitations as a preliminary study; therefore, the results should not be extrapolated to other populations. In addition, although the small sample could be seen as a weakness, it is relevant since small-sample studies are crucial for highlighting complex correlations within specific populations, especially where data access is limited or subgroups require focus [27]. Another point that should be mentioned is the instrument used because there is no specific questionnaire to investigate the intake of cariogenic foods during screen use, which should be developed in the future. The results are promising for further research, especially those that can follow the sample for a long time.

The questionnaire applied to investigate the screen time of the study population – the US Youth Risk Behavior Surveillance System (YRBSS) questionnaire [17], could be seen as another limitation since it was adapted to Portuguese in the present study. Future studies should use a validated transcultural questionnaire for the native language. Moreover, future studies could explore this variable in greater depth to address the potentially confounding role of internet access, particularly by distinguishing between online and offline screen use.

Conclusion

Children with a low socioeconomic status stayed longer watching TV, and the higher education level of their mothers influenced the consumption of more unhealthy foods. Screen time was not associated with the caries experience of the children investigated, and the unhealthy food consumption frequency higher than 4 times a day did not influence the experience of higher caries.

Authors' Contributions

KC	https://orcid.org/0000-0002-3376-327X	Conceptualization, Methodology, Data Curation, Writing - Original Draft and Project Administration.
MLM	https://orcid.org/0000-0001-6777-3225	Methodology, Writing - Review and Editing, Visualization and Supervision.
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AFG	https://orcid.org/0000-0001-6467-7078	Conceptualization, Methodology, Data Curation, Writing - Review and Editing, Visualization and Supervision.

All authors declare that they contributed to a critical review of intellectual content and approval of the final version to be published.

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Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

References

[1] Moitra P, Madan J. Impact of screen time during COVID-19 on eating habits, physical activity, sleep, and depression symptoms: A cross-sectional study in Indian adolescents. PLoS One 2022; 17(3):e0264951. https://doi.org/10.1371/journal.pone.0264951

[2] American Academy of Pediatrics. AAP Council on Communications and Media. Media and young minds. Pediatrics 2016; 138(5):e20162591. https://doi.org/10.1542/peds.2016-2591

[3] American Academy of Pediatrics. AAP Council on Communications and Media. Media use in school-aged children and adolescents. Pediatrics 2016; 138(5):e20162592. https://doi.org/10.1542/peds.2016-2592

[4] Rocka A, Jasielska F, Madras D, Krawiec P, Pac-Kożuchowska E. The impact of digital screen time on dietary habits and physical activity in children and adolescents. Nutrients 2022; 14(14):2985. https://doi.org/10.3390/nu14142985

[5] Ghimire N, Rao A. Comparative evaluation of the influence of television advertisements on children and caries prevalence. Glob Health Action 2013; 6:20066. https://doi.org/10.3402/gha.v6i0.20066

[6] Feldens CA, Vítolo MR, Maciel RR, Baratto PS, Rodrigues PH, Kramer PF. Exploring the risk factors for early-life sugar consumption: A birth cohort study. Int J Paediatr Dent 2021; 31(2):223-230. https://doi.org/10.1111/ipd.12713

[7] World Health Organization. Sugars and decay. Geneva, Switzerland: World Health Organization. WHO publication: 2017.

[8] Salway RE, Emm-Collison L, Sebire S, Thompson JL, Jago R. Associations between socioeconomic position and changes in children's screen-viewing between ages 6 and 9: A longitudinal study. BMJ Open 2019; 9(12):e027481. https://doi.org/10.1136/bmjopen-2018-027481

[9] Elamin A, Garemo M, Gardner A. Dental caries and their association with socioeconomic characteristics, oral hygiene practices and eating habits among preschool children in Abu Dhabi, United Arab Emirates - the NOPLAS project. BMC Oral Health 2018; 18(1):104. https://doi.org/10.1186/s12903-018-0557-8

[10] Vandenbroucke JP, von Elm E, Altman DG, Gøtzsche PC, Mulrow CD, Pocock SJ, et al. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE): Explanation and elaboration. Ann Intern Med 2007; 147(8):W163-W194. https://doi.org/10.7326/0003-4819-147-8-200710160-00010-w1

[11] World Health Organization. Oral health surveys basic methods, 5th ed. WHO: Geneva, Switzerland; 2013.

[12] Associação Brasileira de Empresas de Pesquisa. Critério Padrão de Classificação Econômica Brasil/2019. Available from: https://www.abep.org/criterio-brasil [Accessed on March 18, 2022]. [In Portuguese].

[13] Vollú AL, da Costa MDEPR, Maia LC, Fonseca-Gonçalves A. Evaluation of oral health-related quality of life to assess dental treatment in preschool children with early childhood caries: A preliminary study. J Clin Pediatr Dent 2018; 42(1):37-44. https://doi.org/10.17796/1053-4628-42.1.7

[14] Bomfim RA, Frias AC, Cascaes AM, Mazzilli LEN, Souza LB, Carrer FCA, et al. Sedentary behavior, unhealthy food consumption and dental caries in 12-year-old schoolchildren: A population-based study. Braz Oral Res 2021; 35:e041. https://doi.org/10.1590/1807-3107bor-2021.vol35.0041

[15] Brasil. Ministério da Saúde. Orientações para avaliação de marcadores de consumo alimentar na atenção básica. Brasília, DF: Ministério da Saúde; 2015. Available from: https://bvsms.saude.gov.br/bvs/publicacoes/marcadores_consumo_alimentar_atencao_basica.pdf [Accessed on April 15, 2025]. [In Portuguese].

[16] Feldens CA, Giugliani ER, Vigo Á, Vítolo MR. Early feeding practices and severe early childhood caries in four-year-old children from southern Brazil: A birth cohort study. Caries Res 2010; 44(5):445-452. https://doi.org/10.1159/000319898

[17] Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance System - Adolescent and School Health. 2017. Available from http://www.cdc.gov/HealthyYouth/yrbs/ [Acessed on March 25, 2020].

[18] Börnhorst C, Wijnhoven TM, Kunešová M, Yngve A, Rito AI, Lissner L, et al. WHO European Childhood Obesity Surveillance Initiative: Associations between sleep duration, screen time and food consumption frequencies. BMC Public Health 2015; 15:442. https://doi.org/10.1186/s12889-015-1793-3

[19] Feng G, Peng J, Tu D, Zheng JZ, Feng C. Two paradoxes in linear regression analysis. Shanghai Arch Psychiatry 2016; 28(6):355-360. https://doi.org/10.11919/j.issn.1002-0829.216084

[20] Nagata JM, Ganson KT, Iyer P, Chu J, Baker FC, Pettee Gabriel K, et al. Sociodemographic correlates of contemporary screen time use among 9- and 10-year-old children. J Pediatr 2022; 240:213-220.e2. https://doi.org/10.1016/j.jpeds.2021.08.077

[21] Yilmaz N, Avci G. Exposure to screen time and dental neglect. J Paediatr Child Health 2022; 58(10):1855-1861. https://doi.org/10.1111/jpc.16177

[22] Herman KM, Paradis G, Mathieu ME, O'Loughlin J, Tremblay A, Lambert M. Association between accelerometer-measured physical activity intensities and sedentary time in 8- to 10-year-old children. Pediatr Exerc Sci 2014; 26(1):76-85. https://doi.org/10.1123/pes.2012-0128

[23] Schmitz KH, Harnack L, Fulton JE, Jacobs DR Jr, Gao S, Lytle LA, et al. Reliability and validity of a brief questionnaire to assess television viewing and computer use by middle school children. J Sch Health 2004; 74(9):370-377. https://doi.org/10.1111/j.1746-1561.2004.tb06632.x

[24] Datar A, Nicosia N, Shier V. Maternal work and children's diet, activity, and obesity. Soc Sci Med 2014; 107:196-204. https://doi.org/10.1016/j.socscimed.2013.12.022

[25] Brasil. Ministério da Saúde. SB Brasil 2022: Pesquisa Nacional de Saúde Bucal – Resultados Preliminares. Brasília (DF): Ministério da Saúde; 2022. Available from: https://egestorab.saude.gov.br/image/?file=20221216_I_mod2resultadospreliminaresBrasiliamonsitecompressed_28827769034634535 9.pdf [Accessed on April 15, 2025].

[26] Borghese MM, Tremblay MS, Leduc G, Boyer C, Bélanger P, LeBlanc AG, et al. Independent and combined associations of total sedentary time and television viewing time with food intake patterns of 9- to 11-year-old Canadian children. Appl Physiol Nutr Metab 2014; 39(8):937-943. https://doi.org/10.1139/apnm-2013-0551

[27] Malmqvist J, Hellberg K, Möllås G, Rose R, Shevlin M. Conducting the pilot study: A neglected part of the research process? Methodological findings supporting the importance of piloting in qualitative research studies. Int J Qual Methods 2019; 18:1-11. https://doi.org/10.1177/1609406919878341