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An investigation into childhood obesity and screen media use in a town in the countryside of São Paulo

Avaliação de obesidade infantil e uso de telas em uma escola no interior do estado de São Paulo

Felipe Nascimento Ferreira
ORCID: https://orcid.org/0009-0007-1298-4624
Centro Universitário Estácio de Ribeirão Preto, Brasil
E-mail: pelipenf@gmail.com
Eduardo Longo Dalmazo
ORCID: https://orcid.org/0009-0006-5757-9713
Centro Universitário Estácio de Ribeirão Preto, Brasil
E-mail: eduardodalmazo@hotmail.com
Gabriel Müller Oliveira Amorim
ORCID: https://orcid.org/0009-0002-5161-8524
Centro Universitário Estácio de Ribeirão Preto, Brasil
E-mail: ga959122@gmail.com
Thiago Rodrigues Alves Morais
ORCID: https://orcid.org/0009-0004-1984-1384
Centro Universitário Estácio de Ribeirão Preto, Brasil
E-mail: thiago.rodrigues.1@hotmail.com
Vinicius Jorge Ribeiro do Vale Rodrigues
ORCID: https://orcid.org/0009-0007-2403-0238
Centro Universitário Estácio de Ribeirão Preto, Brasil
E-mail: vinijrvr@outlook.com
Cristiane Cardoso Correia Teixeira
ORCID: https://orcid.org/0000-0002-1194-3907
Centro Universitário Estácio de Ribeirão Preto, Brasil
E-mail: cristiane.teixeira@estacio.br

ABSTRACT

Building upon the aforementioned context, this study seeks to elucidate the relationship between diminished physical activity and the prevalence of overweight/obesity attributed to the extensive utilization of screens and multimedia devices, with particular attention to the role of familial influences. The present investigation employed practical methodologies and field research techniques. A semi-structured questionnaire comprising ten inquiries was administered to children aged 10 to 16, irrespective of gender, who were officially enrolled in a private school located in the town of Serrana - SP. The study reveals significant aspects pertaining to individuals' engagement with screens, characterized by a notable prevalence of prolonged screen time. It underscores the crucial role of familial dynamics and socio-economic circumstances in shaping children's caregiving practices, which warrant attention in mitigating the development of detrimental habits that may compromise individuals' quality of life.

Keywords: Chronic diseases; Obesity, Sedentary lifestyle;

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INTRODUCTION

The prevalence of overweight and obesity is a chronic problem in children, and it has increased in recent years (ABREU, TRAEBERT, 2020). Scientific evidence underscores the critical importance of childhood and pre-adolescent living conditions, as their influence on medical outcomes has been substantiated through empirical observations. These conditions are progressively linked with the development of metabolic and cardiovascular diseases (POIRIER, 2006; ABREU, TRAEBERT, 2020).

Nowadays, this problem is not just a public health issue in Brazil, but worldwide. Its numbers are growing exponentially, affecting children in their physical, socio-cultural, economic, psychological, and emotional aspects, directly affecting the individual from childhood to adulthood (ABREU, TRAEBERT, 2020). Data from the World Health Organization (BRASIL, 2019) (WHO) indicate that 1 in 8 adults in the world is obese and the WHO estimates that, by 2025, there will be approximately 700 million overweight people, 75 million of whom will be children (BRASIL, 2019).

The World Health Organization (BRASIL, 2019) (WHO), in its most recent survey in October of 2017, pointed to a total of 124 million obese children and adolescents worldwide. In Brazil, we consider obese 9.4% of girls and 12.4% of boys, according to the criteria adopted by the WHO to classify childhood obesity. These findings are particularly alarming given the concurrent escalation of disease rates in low- and middle-income nations, as revealed by the survey. Globally, the data demonstrates a staggering increase in the prevalence of obesity among children and adolescents over the past four decades, surging from 11 million to 124 million. Moreover, a WHO survey indicates that an additional 123 million individuals aged 5 to 19 are currently classified as overweight, with a slightly higher prevalence observed among males, where for every 100 individuals, eight are boys, compared to around six girls. According to WHO guidelines, we may consider an individual as obese if their Body Mass Index (BMI) exceeds thirty, with BMI derived from a calculation incorporating weight, height, and age. In Brazil, studies show that children aged 5 have a greater tendency to develop overweight/obesity, affecting various social groups, from the upper classes to the poor ones, showing that it is a latent problem in our country. According to Reis (MARTINS-SILVA T, 2019), recent research has indicated a higher prevalence of weight-related issues in urban settings compared to

rural areas, particularly notable in Brazil's North, Northeast, and Central-West regions (OLIVEIRA, 2011; GOLKE, 2016).

Furthermore, we may note that sedentary behaviors are directly correlated with the notable rise in childhood obesity, compounded by suboptimal dietary patterns characterized by the consumption of calorie-dense foods and disruptions in family dynamics. These factors collectively foster sedentary lifestyles and decrease physical activity levels, thereby amplifying the engagement with multimedia entertainment. Consequently, there is an escalation in the occurrence and prevalence of excess weight not only among children but also among their parents (ABREU, TRAEBERT, 2020).

It is important to highlight that family behaviors, such as insufficient physical activity levels, are closely intertwined with excessive screen time and multimedia device usage. This interaction significantly impacts children's daily activities as technology evolve. Since the end of the 20th century, children have spent more and more time on screens than doing any physical activity (POIRIER, 2006).

In Brazil, data shows a prevalence of 51.8% of screen time among adolescents (SCHAAN et al., 2018). This data emerges as a visible problem in contemporary lifestyles and is a public health issue, which is likely to have alarming consequences, especially as risk factors for chronic pathologies such as diabetes, hypertension, obesity and metabolic syndromes.

In addition, children and adolescents who spend more time on activities such as video games, watching TV and using computers are more likely to be overweight than those who spend more time doing physical activity (BABEY, WOLSTEIN, 2013; OLIVEIRA et al., 2016; ABREU, TRAEBERT, 2020).

Although the American Academy of Pediatrics recommends that children and adolescents limit their screen time to a maximum of 2 hours a day (AAP, 2013), a cursory observation of our surroundings readily attests to the divergence from this prevailing reality. In a recent study conducted in 2020 by a team of researchers in Palhoça, Santa Catarina, the association between screen time and obesity was examined. The study encompassed data collected from 1026 children, revealing an average screen time of 124.5 minutes among participants, with 35.4% classified as overweight. Notably, findings indicated that children exceeding 2 hours of daily screen time exhibited a 4% higher prevalence of obesity in comparison to the ones with reduced screen exposure (ABREU, TRAEBERT, 2020).

Family life and the active behavior of parents have a significant impact on children's lifestyles and, consequently, on the amount of time they are active in physical activities, social interaction and relationships. Consequently, parental oversight and regulation hold the potential to enhance quality of life and foster the adoption of healthy habits, thereby exerting a positive influence on the future well-being of these individuals (ABREU, TRAEBERT, 2020).

In light of these observations, statistical data elucidate a pronounced prevalence of childhood overweight and obesity alongside extensive screen time among children and adolescents, thereby underscoring a notable and pervasive correlation. As a result, there emerges a compelling imperative for scholarly inquiry aimed at delineating the interplay between excessive screen utilization and familial dynamics in shaping childhood obesity. Such investigation is imperative for the formulation and implementation of efficacious interventions within primary care settings, educational institutions, and familial contexts alike.

The excessive use of screens nowadays should be treated as risk factors from a public health perspective. We may consider physical consequences, the development and worsening of pathologies, a decrease of socio-educational interactivity, deficits in physical and motor development, among others, as aspects linked to this behavior, and influential factors are directly linked to family life.

Given these observations, the statistical data signify a notable correlation between the high incidence of childhood overweight and obesity and the pervasive phenomenon of excessive screen time among children and adolescents. This underscores the exigency for a comprehensive investigation into the nexus between prolonged screen exposure and familial influences on childhood obesity, specifically within the town of Serrana - SP. Such an inquiry is indispensable for the formulation and implementation of targeted interventions within primary healthcare systems, tailored to address the needs of children and their familial environments.

Within this scholarly framework, the present study aims to elucidate the intricate relationship between screen engagement and the prevalence of overweight, obesity, and sedentary behaviors among children and adolescents within familial settings. The ramifications of this correlation extend to heightened susceptibility to cardiovascular

ailments and metabolic syndromes, thus necessitating a thorough examination of these interrelated factors.

METHOD

In order to start this research project, we analyzed scientific papers on the subject in electronic databases such as SCIELO and the Virtual Health Library (VHL). The following Health Sciences Descriptors (DeCS) were used for the databases: (1) "Chronic diseases", (2) "Obesity", (3) "Diabetes", (4) "Screens" and (5) "Sedentary lifestyle". With the aim of achieving the proposed objective, the descriptors were used in combination and in isolation.

This was a cross-sectional, descriptive study carried out in a private school in the town of Serrana - SP. A semi-structured questionnaire containing 10 questions was used to collect data, with prior consent, on BMI, diet, medical care, physical activity, screen time and family aspects.

The study involved participants between the ages of 10 and 16, encompassing both genders, who were officially enrolled in a private educational institution situated within the town of Serrana - SP.

Data collection occurred during the period spanning March to May 2023. Inclusion criteria encompassed boys and girls within the specified age range, registered students of the aforementioned private school located in Serrana. Exclusion criteria pertained to individuals diagnosed with neurological disorders

The research endeavor received ethical approval from the Ethics Committee of the Estácio University Center in Ribeirão Preto (CAAE 70621517.0.0000.5581). Participation in the study required parental endorsement through the execution of an informed consent form, while schoolchildren aged 12 years and above provided their assent through the signing of a dedicated form.

RESULTS

The research encompassed a cohort of 41 children who were enrolled in the advanced stages of elementary education and the early year of high school in a private educational institution located in Serrana - SP. Through the utilization of Figures 1 to 8, the study presents graphical representations delineating both the questionnaire responses and the Body Mass Index (BMI) measurements of the participants.

Figure 1 provides an overview of the age distribution among the student populace, revealing that a substantial proportion, specifically 56.2% of the cohort, falls within the age range of 12 to 13 years. Conversely, Figure 2 elucidates the participation rates across different academic years, spanning from the final year of elementary school to the early year of high school. A total of 15% of children were considered obese, which is above the national average, 9.4% in girls and 12.4% in boys (BRASIL, 2019), in absolute numbers, while 22% were overweight. Thus, there is a universe of 37% overweight individuals, which is alarming, and shows a strong correlation between weight gain and the high rate of access to electronic devices (100% of individuals) and high rate of daily interaction (56.1% use at least 5 hours per day), as illustrated in figure 3. It is extremely important to note that the World Health Organization recommends that children and adolescents use screens for between 1 and 2 hours (per day) (BRASIL, 2019).

It is noteworthy that 15% of the students reported being overweight, which shows that they are aware of obesity. Moreover, students who consider themselves overweight are not being monitored by a doctor and are not on a diet. This fact leads to an alarming situation, as it can lead to negligence on the part of the students and their parents themselves, because they do not realize the need for children to be under medical supervision and the risk of childhood obesity.

Medical surveillance proves indispensable, given its role in monitoring the health status of children and adolescents, particularly in terms of dietary education and familial dietary practices, which serve as pivotal determinants of their health outcomes. Notably, 15% of students adhere to dietary recommendations provided by healthcare professionals, mirroring the proportion of students who self-identify as overweight, illustrating a potential correlation. Moreover, 7% of students report receiving food as a form of reward within familial dynamics.

Furthermore, a significant portion of students, comprising 41.5%, habitually engage with electronic devices during meal times, spanning breakfast, lunch, dinner, and intermediate meals, indicative of a concerning trend. Additionally, a substantial majority, 80.5%, utilize electronic devices prior to bedtime, emphasizing the pervasive nature of screen exposure in this demographic.

Figure 1- Students' time using screens (television, video games or cell phones/computers)

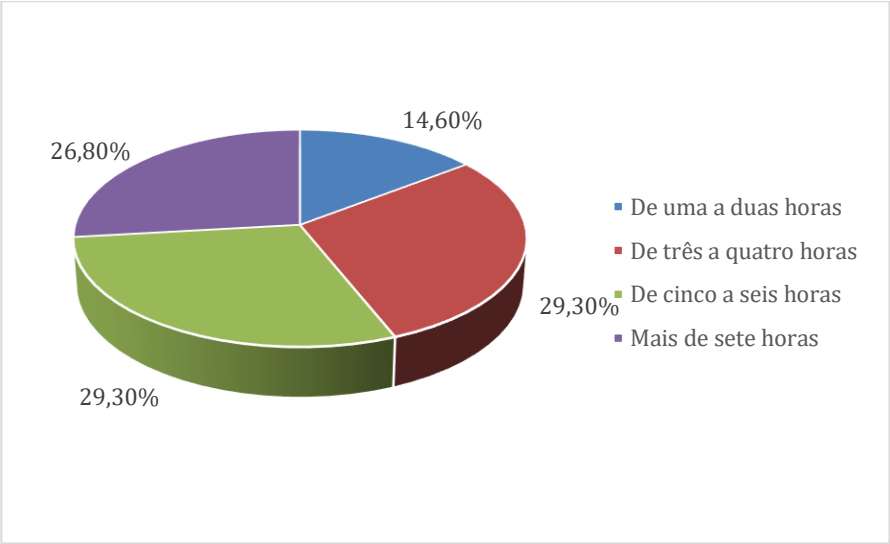
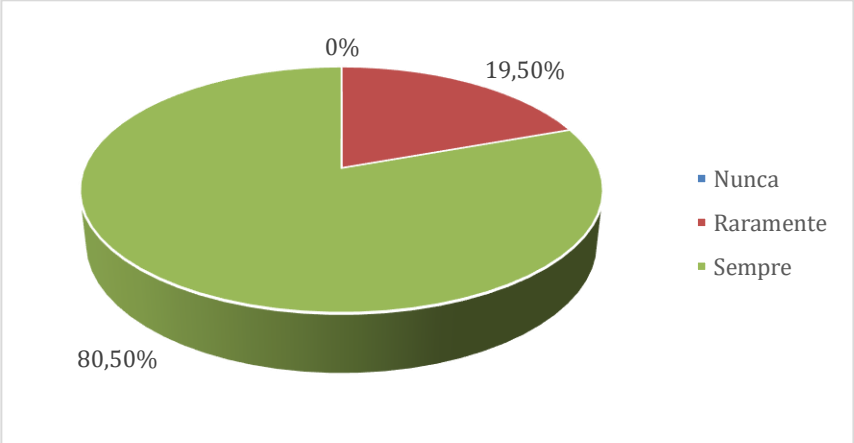


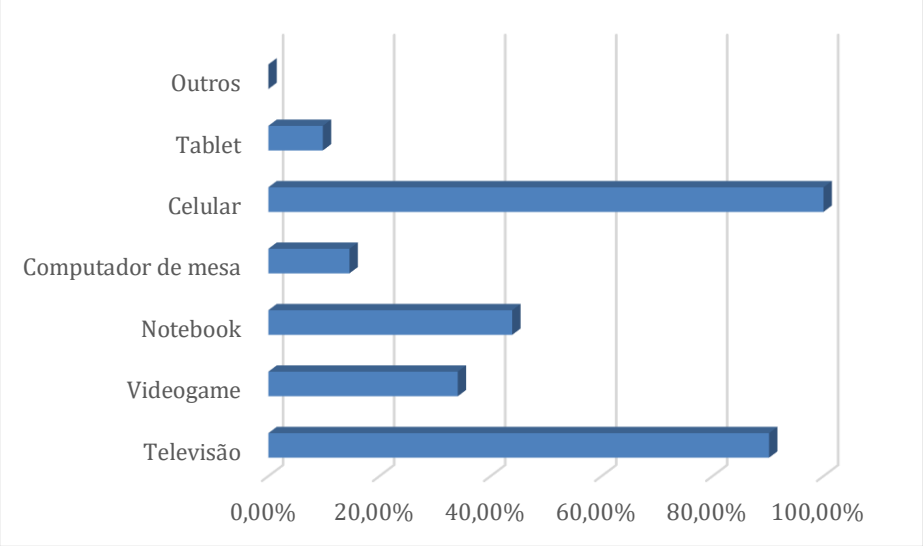
Figure 2 - Use of electronic devices before bedtime



An analysis of the graphs shows how easy it is for these children to access screens, since 100% of the students have access to a cell phone and 90.2% to a television, 43.9% to a laptop and 34.10% to video games.

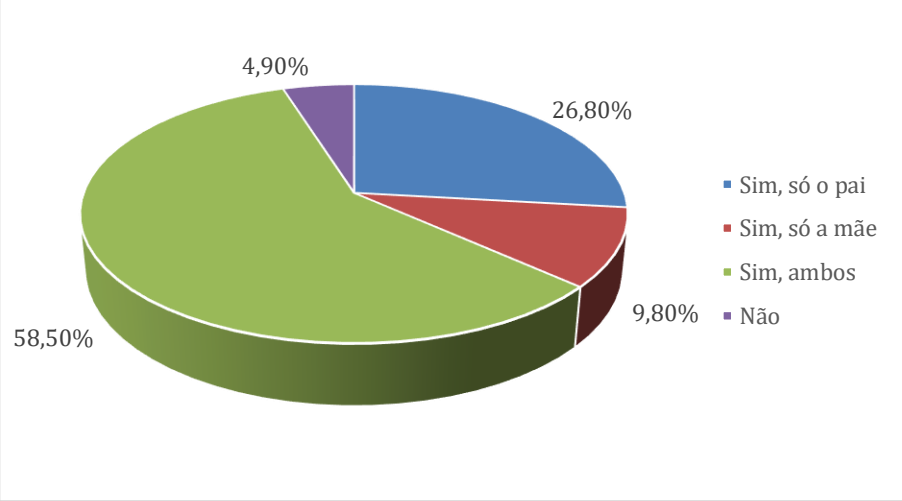
It is possible to verify the activities that children usually practice in a family context, on weekends, with the majority of children (48.8%) reporting going to the shopping center and 26.8% reporting not having these activities.

Figure 3 - Electronic devices used by the children.



The family can play an important role in children's lifestyle habits. In the case of the children studied, 58.50% of their parents work outside the home, so they are unable to keep up with screen time.

Figure 4 - Percentage of parents working outside the home



The study revealed that a notable 78% of students engage in physical exercise as part of their extracurricular activities, which constitutes a commendable statistic in the face of widespread dependence on digital devices.

It is worth mentioning that 44% of students opt to have their meals in the school canteen, indicating considerable exposure to food options that may lack nutritional quality, often characterized by high levels of fats and sugars. Additionally, a significant 44% of students benefit from medical care, irrespective of the frequency of their utilization, underscoring the crucial role of supportive familial contexts.

While the prevalence of obesity does not constitute a majority, familial influence and socio-economic circumstances emerge as significant determinants in the outcomes observed. This is particularly evident in the context of access to nutritious food, information, and leisure opportunities, which are often facilitated by a more affluent family background. Among overweight and obese individuals, 93% used screens for longer than the minimum recommended by the AAP10, while 19% of those with an adequate BMI used them for the recommended time, which shows a significant disparity between the groups and a strong association between excessive screen use and exposure to the risk factors associated with obesity.

Another significant correlation identified pertained to individuals classified as obese or overweight, wherein 20% exhibited maternal absence due to employment outside the home, contrasting with a mere 4% prevalence among individuals with normal weight. This finding underscores the potential influence of maternal absence, often attributed to employment commitments, on the weight status of children and adolescents. Notably, it is widely acknowledged that single-parent households are predisposed to heightened media consumption tendencies.

DISCUSSION

The following study showed a wide range and high prevalence of excessive use of screens in general among children and adolescents. We can demonstrate that 15% of these children are considered obese, leading to the relevance that they are the ones who spend the most time on electronic devices; however, this was not enough to show that 37% of adolescents are overweight due to poor diet. According to the recommendations of the World Health Organization (BRASIL, 2019), the ideal screen time for children and adolescents is up to two hours a day, but by observing the data collected, 85.4% of all individuals make excessive use of multimedia devices, more than two hours a day for instance.

The growing adoption of technology is causing people to spend more time sitting down, and it is likely that the time spent doing so will continue to increase in the coming years. In the last decade, a growing number of studies have reported health-related consequences of excessive sedentary time, especially time in front of screens. Among adolescents, increased screen time has been associated with cardiometabolic risk factors, lower adherence to physical activity, behavioral variations, low self-esteem and poorer mental health, which consequently leads to a significant increase in weight, when also associated with poor diet among children and adolescents (POIRIER, 2006; BABEY, WOLSTEIN, 2013; MARQUES,LOUREIRO, 2020).

The importance of this constant observation can therefore be emphasized. In order to prevent the aggravation of the aforementioned diseases, in addition to the fact that if there is no control over the issue, the obese individuals in the study (15%), overweight individuals and even those with a normal BMI (18.5 - 24.9) may have their clinical conditions negatively aggravated, interfering with their quality of life.

Studies underscore the pivotal role of adolescence as a critical developmental phase for establishing health-related behaviors that can persist into early adulthood. Consequently, comprehending behavioral patterns spanning from early adolescence to early adulthood assumes paramount importance. Research in adolescent health behavior delineates the intricate interplay between individual behaviors and resultant health outcomes. Remarkably, endeavors to amalgamate various health-related behaviors into a cohesive framework promoting a healthy lifestyle remain uncommon.

Parental intervention manifests diverse mitigating effects on electronic device usage among children. Notably, parental control and provision of devices as a means of diversionary engagement are prominent approaches associated with diminished verbal and non-verbal interactions between parents and their children. Additionally, the influence of indiscriminate and excessive parental device use emerges as a potent predictor of media consumption habits within the familial environment.

In all the analyses, we observed widespread levels of excessive screen time and television viewing. A significant number of Brazilian teenagers spend two hours or more a day in front of screens. Similarly, 59.2% of Spaniards and 80.6% of Canadians spend more than two hours a day in front of a screen. Data from the United States shows that the penetration of television consumption decreased between 1999 and 2013 (43% vs. 32%). On the other hand, the percentage of US teenagers who play video games or use

computers for more than two hours a day during their free time increased from 2003 to 2013 (22% vs. 41%). Similarly, television consumption among Brazilian teenagers decreased over the decade, while computer and video game use increased (SCHAAN, 2019).

In terms of physical activity, the amount of activity dropped significantly between the ages of 11 and 15. All countries and regions show similar declines in physical activity with age. Previous studies have also documented declines in physical activity with age, using objective measures of physical activity. As adolescents get older, they gain more independence and are exposed to other environments and influences. Consistent with previous research, screen time behaviors increase throughout adolescence. This trend is likely to intensify given the significant increase in screen time and new media in recent years, especially as market saturation among teens for similar portable devices such as smartphones and tablets exceeds 50%. This finding may reflect two realities for teenagers: increased academic demands and a greater need for social interaction.

In addition, it has been observed that fruit and vegetable consumption decreases during adolescence and age is considered a determinant of this consumption. The downward trend in fruit and vegetable consumption begins in childhood and continues into early adulthood (PEDIATRICS, 2013). This downward trend is underlined by the multiple lifestyles and physical and environmental changes that occur during adolescence (such as peer influence or school availability), from early to mid-adolescence. Adolescents' greater freedom in food choices and the degree of support for fruit and vegetable consumption during this period may explain the decline in fruit and vegetable consumption throughout adolescence (MARQUES,LOUREIRO, 2020; SOUZA, MARQUES, REUTER, 2020).

CONCLUSION

Given the contextual scenario that the research findings were contextualized, it is evident that the prevalence of childhood obesity cannot be solely attributed to habits and behavioral patterns concerning excessive screen usage. This multifaceted phenomenon is intricately intertwined with broader socio-economic factors, encompassing access to recreational opportunities, informational resources, and the cultivation of healthy lifestyle habits, as well as the presence of familial networks that offer supportive environments conducive to optimal health outcomes. Consequently, a more extensive and nuanced

investigation, encompassing a diverse array of individuals from varied socio-economic strata, is imperative to comprehensively delineate the impact of such habits on children's health.

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