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Pedro Lucas Santos de Carvalho , [Djalma Pereira Santana](#) , [Cristiane Santos Matos](#) , [Thiago Ferreira de Sousa](#) *

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Article

Prevalence and Factors Associated with High Computer Use Time for Leisure and Social Media Access Among Brazilian University Students

Pedro Lucas Santos de Carvalho ¹, Djalma Pereira Santana ², Cristiane Santos Matos ² and Thiago Ferreira de Sousa ^{2,*}

¹ Research Group on Physical Activity, Health and Happiness, State University of Santa Cruz, Brazil

² State University of Santa Cruz, Brazil

* Correspondence: tfsousa@uesc.br

Abstract

Excessive leisure-time computer use among university students is associated with a higher risk of depression, anxiety, and chronic non-communicable diseases. The objective was to estimate the prevalence and sociodemographic factors, university affiliation, and physical activity practice associated with high leisure-time computer use and access to social networks among Brazilian university students. A cross-sectional study was conducted with a sample of 1,250 university students (60.0% women). The outcome was high computer usage time for leisure and access to social networks (≥ 138 minutes/day during the week and ≥ 300 minutes/day on weekends). The independent variables were sex, age, marital status, self-reported skin color, length of university enrollment, study period, number of computers and laptops at home, and physical activity. The association was estimated via Prevalence Ratios. The prevalence of the outcome was 19.9%. University students aged 18 to 24 years showed higher prevalences of high screen time for leisure (PR: 1.68; 95%CI: 1.11-2.54). It is concluded that young university students are the group most susceptible to high screen time, in the context of computer use for leisure and access to social networks.

Keywords: screen time; students; cross-sectional studies

1. Introduction

Insufficient levels of physical activity are recognized as one of the main risk factors for the development of chronic non-communicable diseases (NCDs), such as cardiovascular diseases, type II diabetes, and certain types of cancer [1,2]. In addition, they are associated with reduced life expectancy and quality of life in a large portion of the population [2,3]. Conversely, high exposure to sedentary behavior has increased worldwide, especially among young individuals engaged in academic activities, a situation reinforced by the growing need to use computers and laptops [4,5].

With the advancement of the digital era and the emergence of these technologies, the need to use such tools for learning has expanded, resulting in transformations in lifestyle habits, particularly among university students [6–8]. Thus, university students appear to be vulnerable to excessive sedentary behavior, which leads to negative impacts on both physical and mental health [4,9].

In the Brazilian context, research has focused on the sedentary behavior of university students [8]. Nevertheless, sociocultural and regional particularities still require further investigation in this country, given its continental dimensions and the economic and social diversity of its population [10]. Among the states in the northeastern region of Brazil, the state of Bahia stands out for its significant number of individuals enrolled in higher education institutions [11]. Therefore, considering the magnitude of this Brazilian state within the national context, understanding technology use among university students demonstrates the relevance and importance of developing effective and targeted health promotion strategies [12].

Recreational computer use and engagement with digital platforms, such as social media, are common behaviors integrated into the social context [7]. This pattern favors prolonged sedentary behavior, reducing, for instance, the time dedicated to physical activity and social interaction [4]. Therefore, identifying profiles with greater exposure to this behavior during leisure time may contribute to the development of institutional policies and initiatives aimed at promoting an active and healthy lifestyle [4,12]. Based on these considerations, the objective of this study was to estimate the prevalence and the sociodemographic and university-related factors associated with high computer use time for leisure and social media access among Brazilian university students.

2. Methods

This epidemiological, cross-sectional study is part of the research project entitled “Lifestyle and Quality of Life of Students at Federal Universities in the State of Bahia: Analysis of Repeated Surveys”. The objective of this research was to monitor the distribution and characteristics associated with risk factors for chronic non-communicable diseases among students at Federal Universities (FUs) in the state of Bahia, encompassing two surveys conducted in 2019 and 2023. The information presented in this article refers to the survey carried out in 2023. The study was approved by five research ethics committees (approval numbers: 2,767,041; 2,795,177; 2,915,077; 3,033,773; 6,138,116).

The study population consisted of undergraduate students enrolled in on-campus courses at the FUs located in the state of Bahia, Brazil. All FUs headquartered in the state, as well as campuses of institutions based in other states, were included. In total, six higher education institutions from Bahia participated in the study: the Federal University of Recôncavo da Bahia (UFRB), the Federal University of Vale do São Francisco (UNIVASF), the Federal University of Bahia (UFBA), the Federal University of Southern Bahia (UFSB), the Federal University of Western Bahia (UFOB), and the University for International Integration of Afro-Brazilian Lusophony (UNILAB).

All university students who provided informed consent for participation were included, regardless of sex, age, or physical condition. After data tabulation, students with special enrollment status (those holding a higher education degree who enrolled in undergraduate courses), students enrolled in technical programs, and those under 18 years of age were excluded. These exclusion criteria were specified in the informed consent form. The implementation of these criteria was made possible through specific questions included in the data collection instrument used to control the study sample.

The study sample was defined using the equation proposed by Luiz and Magnanini [13]. A prevalence of 50% was adopted, with a 95% confidence level and an acceptable sampling error of three percentage points for the target population of 49,140 university students, corresponding to the total number of enrolled students across all participating campuses. Subsequently, 40% was added to account for potential losses and 15% for association analyses. The final calculated sample size was 1,682 students, and participation occurred through convenience sampling.

Data collection took place between February 1 and December 16, 2023. The research instrument was developed and made available through an electronic form, which was sent via email to all university students at the participating institutions. The emails were forwarded by course coordinators or administrative sectors responsible for electronic communications. In addition, students were also approached in classrooms, either before or after classes, on different days of the week, individually or in small groups, and invited to participate using laptops or smartphones. The data collection team consisted of university students not participating in the study and graduate students enrolled in master's programs.

Information was collected through a questionnaire containing 68 objective questions, with an average completion time of 30 minutes. The dependent variable of this study was high computer use time for leisure and social media access [14,15]. Participants reported the amount of time (in hours and minutes) spent using a computer for leisure and social media access on a weekday (Monday to Friday) and on a weekend day (Saturday or Sunday). A weighted average of this time was calculated as follows: $[(\text{weekday} \times 5) + (\text{weekend} \times 2)] / 7$. Subsequently, high computer use time for leisure and

social media access was defined as ≥ 138 minutes per day during the week and ≥ 300 minutes per day on weekends [16]. Other response options were grouped under the category “others.”.

The independent variables of this study included sociodemographic characteristics and university-related factors: sex (male, female); age group (18–24 years, 25–34 years, and 35–73 years); marital status (with partner, without partner); self-reported skin color (white, black, or brown; students reporting yellow or Indigenous skin color were excluded due to low frequency, 0.5% and 0.3%, respectively); length of university enrollment (1 year, 2 years, 3 years, or 4 years or more); study period (daytime, nighttime); and number of desktop or laptop computers available in the household (none, 1, 2, 3, or 4). The independent variable, moderate-to-vigorous physical activity was measured using the short version of the International Physical Activity Questionnaire (IPAQ). Students were classified as active (≥ 150 minutes per week) or insufficiently active (≤ 149 minutes per week). Vigorous-intensity activity time was weighted by two [17].

Data were tabulated in Microsoft Excel, and analyses were conducted using SPSS software, version 25.0. Given the non-probabilistic sampling procedure, sample weights were applied [18,19], based on the census of federal higher education institutions [20]. Descriptive analyses of absolute and relative frequencies were performed. The chi-square test for heterogeneity and the chi-square test for linear trend were used in bivariate analyses between the independent and dependent variables. Variables with p-values up to 0.20 were included simultaneously in the adjusted analysis using Poisson regression with robust variance adjustment to estimate prevalence ratios (PR), complemented by 95% confidence intervals (95%CI). The significance level adopted was 5%.

3. Results

A total of 1,273 university students submitted the form; however, 20 submissions corresponded to refusals to participate, two were excluded because they reported being enrolled in graduate programs, and one was excluded for being under 18 years of age. The final sample comprised 1,250 university students. Table 1 presents the characteristics of the study sample, which was composed mainly of female students, predominantly aged between 18 and 24 years, single (77.6%), and self-identified as brown (41.7%). Approximately 47.3% had been attending university for four years or more. There was a predominance of students attending daytime courses and those who reported having one (01) desktop or laptop at home. A total of 23.3% of university students were classified as insufficiently active.

Table 1. Description of the sample of university students from federal universities in the state of Bahia. Brazil. 2023.

Variables	n	%
Sex		
Male	436	40.0
Female	802	60.0
Age group		
18 to 24 years	724	58.5
25 to 34 years	307	27.3
35 to 73 years	205	14.2
Marital status		
Without partner	950	77.6

With partner	294	22.4
Self-reported skin color		
White	342	25.6
Black	357	32.7
Brown	522	41.7
Length of university enrollment		
1 year	236	19.3
2 years	258	20.4
3 years	185	13.0
4 years or more	511	47.3
Study period		
Daytime	860	68.3
Nighttime	386	31.7
Number of desktop or laptop computers available in the household		
None	108	9.1
1	663	52.3
2	296	25.1
3	87	6.8
4	89	6.7
Physical activity (min/wk)		
Active	869	76.7
Insufficiently active	284	23.3

%: Weighted relative frequency; min: minutes; wk: week.

The prevalence of prolonged computer use for leisure among university students was 19.9%. It was observed that female students showed a higher prevalence of this prolonged screen time, and there was a linear decrease in the prevalence of prolonged computer use for leisure with increasing age group (Table 2). Table 3 presents the adjusted analysis between the exploratory characteristics and prolonged computer use for leisure and access to social networks. It was observed that younger university students (18–24 years) were associated with greater engagement in this behavior (PR: 1.68; 95%CI: 1.11–2.54).

Table 2. Bivariate association between exploratory characteristics and high computer usage time among students at federal universities in the state of Bahia, Brazil, 2023.

Variables	n	%	p
Sex			0.029*
Male	78	22.9	
Female	133	17.6	
Age group			0.017**
18 to 24 years	156	21.7	
25 to 34 years	44	19.6	
35 to 73 years	11	13.1	
Marital status			0.134*
Without partner	176	20.9	
With partner	37	16.7	
Self-reported skin color			0.284*
White	60	18.0	
Black	58	18.8	
Brown	93	22.2	
Length of university enrollment			0.693**
1 year	43	17.4	
2 years	47	20.0	
3 years	27	14.4	
4 years or more	86	17.3	
Study period			0.431*
Daytime	151	19.2	
Nighttime	61	21.2	
Number of desktop or laptop computers available in the household			0.072**
None	14	13.1	
1	115	20.0	
2	42	19.1	
3	20	27.2	
4	20	28.2	

Physical activity (min/wk)		0.779*	
Active	149	18.6	
Insufficiently active	55	19.4	

%: Weighted relative frequency; p*: chi-square test for heterogeneity; p**: chi-square test for linear trend; min: minutes; wk: week.

Table 3. Adjusted analysis between exploratory characteristics and high computer usage time among students at federal universities in the state of Bahia. 2023.

Variables	PR	95%CI	p
Sex			0.098*
Male	1.21	0.97-1.51	
Female	1.00		
Age group			0.007**
18 to 24 years	1.68	1.11-2.54	
25 to 34 years	1.39	0.89-2.18	
35 to 73 years	1.00		
Marital status			0.385*
Without partner	1.15	0.84-1.57	
With partner	1.00		
Number of desktop or laptop computers available in the household			0.117**
None	0.54	0.29-1.01	
1	0.92	0.61-1.37	
2	0.83	0.53-1.30	
3	1.10	0.66-1.84	
4	1.00		

PR: Prevalence Ratios; 95%CI: 95% Confidence Interval; p*: Wald test for heterogeneity; p**: Wald test for linear trend.

4. Discussion

The present study showed that approximately 20 out of every 100 undergraduate students enrolled in federal institutions in the state of Bahia had prolonged computer use for leisure and access to social networks. It was also observed that younger university students were more likely to spend longer leisure screen time.

The prevalence of prolonged computer use for leisure in this study was 19.9%. This result aligns with the prevalence of screen time (computer plus television) identified in a systematic review, which reported values of 16.5% (≥4 hours/day) and 20.8% (≥2 hours/day) [8]. On the other hand, specific

information on computer uses for leisure and social network access, in addition to computer use for study purposes, among university students from the state of Bahia, indicated a prevalence of 56.1% when considering ≥ 2 hours/day of this behavior [21]. Thus, it can be considered that computers, even during the university period, which require study dedication, and despite the possibility of using other technologies such as smartphones for social network access, remain a common means of leisure.

It is important to note that studies often do not distinguish screen time spent on each electronic device, which may include television, computers, video games, tablets, and smartphones simultaneously [8], making comparisons with our results difficult. Furthermore, there is variation in the cutoff points used to characterize high exposure to sedentary behaviors [8], limiting possible comparisons. Nonetheless, the cutoff point adopted to define excessive computer use for leisure in this study was based on the prediction of an important health indicator (self-rated health) [15], a classical measure that allows identifying groups at risk for morbidities and premature mortality [22,23].

Younger university students, that is, those aged 18 to 24 years, showed greater involvement in prolonged computer use for leisure and access to social networks [24]. Other studies indicate that academic demands increase over the semesters, implying greater computer use among older students; however, younger individuals predominate among university entrants [25].

In this study, sex was not associated with this health-risk behavior. Nevertheless, higher prevalence values have been more frequently identified among men (95%CI: 0.97–1.51) [26,27]. It should be considered that screen use for leisure tends to be more prevalent among women, particularly regarding smartphones and television, which may be justified by cultural aspects, such as encouragement for television watching and greater involvement in household activities [28]. However, the results of our study may indicate that among men, there is a greater tendency to use the computer for social network access during leisure time, which could be related to women's better academic dedication when using this technological tool [29,30].

Other variables, such as marital status and the number of desktops and laptops in the household, showed no significant association with prolonged computer use for leisure among university students [31]. The number of devices may reflect a potential economic indicator; however, in this study, regardless of economic aspects, the use of computers for leisure occurred in a similar manner [32]. The lack of association between marital status and computer use for leisure reflects how technology permeates different social settings [27].

Screen time represents an important risk factor for population health [33]. Computer use is notably common in academic contexts, given the need for prolonged study-related activities [8,31]. Consequently, this additional portion of leisure-related computer use amplifies health risks due to the cumulative effect of various screen-based behaviors, as well as prolonged sitting during classes [33,34]. Therefore, university routines could be managed to include opportunities for active leisure, as a strategy to mitigate the negative impacts of sedentary computer use [35].

In this study, computer use time during leisure was similar between active and insufficiently active individuals. Studies confirm the important role of physical activity in mitigating screen time [33,36,37]. However, it is expected that academic demands, which typically require computer use for learning and thus may encourage simultaneous use for leisure, will occur in a balanced way regardless of physical activity.

Some limitations of this study should be acknowledged, such as the online data collection method. Individuals without internet access or electronic devices may not have had the opportunity to participate [38]. However, efforts were made to minimize this bias by disseminating the study throughout different periods of the academic semester and through in-person invitations. Additionally, sampling weights were applied to allow for generalization of the results to the university student profile of federal institutions in Bahia [39]. Moreover, data were self-reported, which may lead to response bias; nevertheless, the measures used demonstrated satisfactory validity and reproducibility [14,15,40].

5. Conclusions

In conclusion, the prevalence of prolonged computer use for leisure was high. Younger university students were more prone to this behavior during leisure time. Institutional policies should promote health education initiatives starting from students' entry into higher education, emphasizing the importance of adopting an active lifestyle, even with the routine academic demands that require regular computer use.

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