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Screen time and physical activity among university students during the pandemic

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Abstract

Chronic Noncommunicable Diseases represent a public health problem worldwide and are the result of a combination of different risk factors such as insufficient physical activity and excessive use of electronic devices. To identify the frequency of physical activity and the use of electronic devices and television among college students. This is a cross-sectional study with a quantitative approach carried out with 87 university students from a private Higher Education Institution in the Federal District during the second half of 2020. Data collection was performed using a structured electronic questionnaire. Descriptive statistics were used for data analysis using the Statistical Package for Social Sciences (SPSS) version 21.0 software. It was observed that 63 (72.4%) students reported practicing some type of physical activity in the last three months. Concerning the frequency of physical activity, 53 (60.9%) students reported practicing at least once a week, and 21 (24.1%) reported practicing 3 to 4 days a week. As for the use of electronic devices, it was observed that 80 (92.0%) students reported using them in their free time, the most reported time of use was 2-3 hours. There was a high frequency of use of electronic devices and insufficient practice of physical activity among university students during the COVID-19 pandemic. Therefore, it is crucial to establish interventions to promote the adoption of healthy lifestyle habits for this group.

Keywords: Physical Activity. Screen Time. Non-communicable diseases. COVID-19. University education.

INTRODUCTION

It is recognized that the insufficient practice of physical activity is a health risk behavior since it is associated with the occurrence of chronic non-transmissible diseases such as arterial hypertension and diabetes[1] when combined with another risk behavior that is excessive use of screens, the damage is even greater to health[2]. The emergence and advancement of the COVID-19 pandemic resulted in recommendations for isolation/social distancing by the authorities with the aim of reducing the transmission of the virus. This context had a significant impact on risk behaviors[3,4].

The World Health Organization (WHO) recommends the regular practice of moderate-intensity physical activity for at least 150 to 300 minutes a week[5]. However, with the

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event of the COVID-19 pandemic and the sanitary measures for its control, such as the closing of gyms and clubs, in order to avoid crowds[3], a negative impact was observed on the practice of physical activity and the increase in the time of use of electronic devices (computer, tablet, or cell phone) and television by the university public, including classes in the remote/distance learning (DL) format[6,7].

According to Crepaldi *et al.*[6], the insufficient practice of physical activity and the excessive use of electronic devices are considerable risk factors for the development of Chronic Noncommunicable Diseases (CNCDs), which are among the main causes of mortality worldwide[5] and socioeconomic losses[8]. Furthermore, evidence indicates that the lifestyle of university students has not been healthy, since the academic environment can expose them to many demands that favor the adoption of a fast-paced lifestyle, irregular routine, neglect of their own health, and situations of stress[9,10,11].

When considering the consequences of the COVID-19 pandemic and the entry of students into the academic environment, it is understood that it is necessary to recognize the profile of behavior and habits of this population in order to alert educators and managers about the importance of creating strategic actions to promote physical activity and prevention of CNCDs among this group. Thus, the present study aims to identify the frequency of physical activity and the use of electronic devices/television during the COVID-19 pandemic among university students at a Higher Education Institution (HEI) in the second half of 2020.

METHODS

This is a cross-sectional, descriptive study, carried out in a private Higher Education Institution (HEI), located in the Federal District of Brazil, from October to November 2020.

A sample calculation was carried out using the Winpepi program, based upon the 5,507 students enrolled at an HEI, in undergraduate courses offered on the different campuses. A sampling error of 5% was considered, obtaining a sample of 87 students. For the selection of the sample, students from different areas of knowledge were considered: Health Sciences, Engineering, Exact Sciences, Humanities, Applied Sciences, Linguistics, and Literature.

Inclusion criteria for participating in the study were being 18 years old or older, regardless of gender, being enrolled in one of the aforementioned areas of knowledge, expressing interest in participating, and electronically signing the Informed Consent Form (ICF). As an exclusion criterion, university students who declared themselves pregnant during the data collection period were excluded, in order to avoid misinterpretation of the results, since this period is characterized by physiological changes that can cause changes in variables related to practice, frequency, duration, and modality of physical activity.

Participants were recruited during the remote class period, which took place via the Microsoft Teams virtual platform. The researchers accessed the virtual class with the authorization of the professor and explained the study and invited them to participate in it. Subsequently, the researchers provided the link that enabled access to the ICF and the structured electronic questionnaire through the Google Forms platform. Only students who signed the virtual ICF, answered the questionnaire, and submitted it to the researchers, participated in the study.

Data were collected through the application of a structured questionnaire that encompassed sociodemographic data (age, sex, marital status, current job, self-declared color, individual and family income, undergraduate

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course, and semester) which was prepared by the researchers.

To assess risk behaviors, insufficient practice of physical activity and excessive use of screens, the questionnaire applied in the Surveillance Survey of Risk and Protective Factors for Chronic Diseases by Telephone Survey - VIGITEL[12] was used, using the following questions regarding the practice of physical activity: In the last three months, did you practice any type of physical exercise or sport?; Do you exercise at least once a week?; How many days a week do you usually practice physical exercise or sport?; On the day you practice exercise or sport, how long does this activity last?; What is the main type of physical exercise or sport you practiced?.

The practice of physical activity in university students was considered when the individual reported practicing some type of physical activity or sport in their free time equivalent to at least 150 minutes of moderate-intensity activity per week. Among the modalities questioned were: walking outdoors (not counting commuting to work), walking on a treadmill; running (jogging); treadmill running; bodybuilding; aerobic gymnastics (spinning, step, jump); water aerobics; gymnastics in general (stretching, Pilates, yoga); swimming; martial arts and fighting (jiu-jitsu, karate, judo, boxing, muay thai, capoeira); bicycle (includes exercise bike); soccer/futsal; Basketball; volleyball/foot volleyball; tennis; dancing (ballet, ballroom dancing, belly dancing); others[12].

The questions used to assess the use/time of electronic devices (computer, tablet, cell phone), television in free time[12] were: On average, how many hours a day do you usually spend watching television? In your free time, do you usually use a computer, tablet, or cell phone to participate in social networks such as Facebook, to watch movies, or to play games? On average, how many hours of your free time (excluding work) does this use of the computer, tablet, or cell phone occupy per day?

The analysis of the continuous variable age was performed through the mean, as it presents a Gaussian distribution, and the categorical variables were expressed through frequency and proportions. Data analysis was performed using the Statistical Package for Social Sciences (SPSS) software, version 21.0.

Data collection took place with the approval of the Ethics and Research Committee, under opinion number CAAE: 29338819.1.0000.5056, and followed the ethical precepts provided for in Resolution 466/2012[13].

RESULTS

Among the 87 participants in this study, 57 (65.5%) were female, with a mean age of 23 years old, 67 (77%) were single, and 55 (51.7%) were of brown ethnicity. Most of them were enrolled in health science courses, as shown in Figure 1.

With regards to the practice of physical activity, it was observed that 63 (72.4%) students reported practicing some type of physical activity in the last three months. Regarding frequency, 53 (60.9%) reported practicing some type of physical activity at least once a week and 21 (24.1%) reported practicing physical activity 3 to 4 days a week.

When asked about the duration of physical activity, it was found that 30 (34.5%) students reported a time of 60 minutes or more performing physical activity (Table 1).

It was demonstrated that bodybuilding was the most frequent physical activity modality 30 (34.1%), followed by walking 09 (10.2%), running 05 (5.7%), bicycling 04 (4.5%), and dancing 04 (4.5%).

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Concerning the use of electronic devices/television, 80 (92%) students reported using electronic devices in their free time. Of these, 22 (25.3%) individuals reported viewing times between 2 and 3 hours, and 15 (17.2%) for more than 6 hours, as shown in Table 2. Regarding television time, for the majority of participants, it was less than 1 hour (27 – 31.0%) and 25 (28.7%) reported not watching.

Figure 1 - Characterization of the sample regarding the area of knowledge and the semester, Brasília-DF, 2020.2.

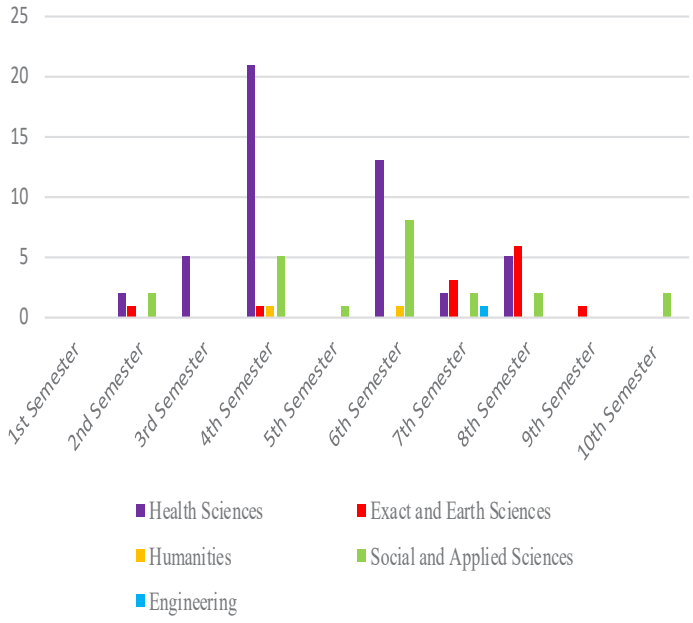

Table 1 - Frequency/duration of physical activity practice among study participants, Brasília, DF, 2020.2.

Practice of physical activity	N	%
Practice of physical activity in the last 3 months		
No	24	27.6
Yes	63	72.4
Exercise at least once a week		
No	34	39.1
Yes	53	60.9
Frequency of physical activity per day of the week		
1 to 2 days a week	13	15.0
3 to 4 days a week	21	24.1

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... continuation table 1

Practice of physical activity	N	%
5 to 6 days a week	19	21.9
Every day (including Saturday and Sunday)	3	3.4
Does not apply[1]	31	35.6
Duration of physical activity		
60 minutes or more	30	34.5
Between 10 and 19 minutes	4	4.6
Between 20 and 29 minutes	1	1.1
Between 30 and 39 minutes	6	6.9
Between 40 and 49 minutes	8	9.2
Between 50 and 59 minutes	19	21.9
Less than 10 minutes	3	3.4
Does not apply[1]	16	18.4

Note: [1]Not applicable: Refers to university students who denied any frequency/duration of physical activity practice.

Table 2 - Use and duration of use of electronic devices/television by study participants, Brasília, DF, 2020.2.

Variables	N	%
Use of electronic devices1 in free time		
No	7	8.0
Yes	80	92.0
Length of use of electronic devices in free time (except at work)		
Between 1 and 2 hours	15	17.2
Between 2 and 3 hours	22	25.3
Between 3 and 4 hours	14	16.1
Between 4 and 5 hours	9	10.3
Between 5 and 6 hours	5	5.8
More than 6 hours	15	17.2
Less than 1 hour	6	7.0
Does not apply[2]	1	1.1
TV time		
Between 1 and 2 hours	20	23.0
Between 2 and 3 hours	8	9.2
Between 3 and 4 hours	5	5.8
Between 4 and 5 hours	1	1.1
Between 5 and 6 hours	1	1.1
Less than 1 hour	27	31.0
Does not watch television	25	28.8

Note: [1]Electronic devices refers to computer, tablet and/or cell phone; [2]Not applicable: Refers to university students who denied the duration of use of electronic devices in their free time.

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DISCUSSION

The results of this cross-sectional study showed that during the pandemic scenario caused by COVID-19, the frequency of use of electronic devices during free time was high among college students. The findings of this research also showed that the frequency/practice/duration of physical activity was high among university students, which is in line with what is recommended by the World Health Organization (WHO), which recommends the regular practice of physical activity to obtain substantial health benefits[5]. Therefore, it is important to encourage reflections on the need/importance of adopting healthy lifestyle habits, which can have a positive impact on health promotion/disease prevention.

It is recognized that the regular practice of physical activity brings numerous benefits to health, such as the improvement of physical conditioning and cardiorespiratory capacity, the stimulation of angiogenesis in order to facilitate the transportation of nutrients and oxygen to the body, the release of beta-endorphins which leads to a feeling of well-being, a decrease in blood glucose and blood pressure, an increase in bone mass and lean mass, and provides prevention and control of CNCDs, as well as an improvement in quality of life[1,5].

Furthermore, the proper practice of physical activity is recognized as a potent brain stimulator by inducing the expression of genes associated with the formation of new synapses and new neurons, increasing vascularity and brain metabolism, and providing an improvement in emotional well-being, a reduction in stress, depression, and anxiety, in addition to enhancing reasoning, creativity, memory, increasing the ability to concentrate and understand[1].

Although most college students reported practicing physical activity adequately, a percentage of 27.6% reported insufficient physical activity in the last 3 months. Therefore, it is considered important to implement actions to encourage the practice of physical activity so that these inactive students can include this habit of life in their routines.

The cross-sectional study carried out by Molano-Tobar and collaborators (2019)[11], during the 2nd semester of 2016, with 350 students from a public university in Colombia, whose objective was to characterize the dimension of physical activity and its relationship with the curriculum, showed that the insufficient practice of physical activity among these may be related to factors such as laziness, lack of time, lack of infrastructure, and physical activities provided by universities. Furthermore, it was found that the more academic workload the student had, the greater the score obtained in the dimension of practices evaluated as "unhealthy", which can lead university students to adopt sedentary behaviors.

On the other hand, it is recognized that the current scenario caused by the COVID-19 pandemic makes it impossible and/or difficult to practice physical activity. Santos and Azambuja4 described in their cross-sectional study carried out with 721 Physical Education students from the state of Rio Grande do Sul, between April 1 and May 31, 2020, whose objective was to analyze the impact of the COVID-19 pandemic on the study routine and the practice of physical activities of students, found that 35% of students interrupted their studies completely and 27.9% reported that their routines changed to a greater academic demand, in which the time devoted to television increased from one to two hours a day (47.7%) to up to four hours (63.7%). They also found that women had more screen time watching television (>3h/

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day) during the pandemic period, there was an increase from 3.1% to 18.7% of students who were not practicing any physical activity, and those that remained active, decreased the number of days of weekly practice and the average time per session[4].

According to data from FIOCRUZ[14], 70% of Brazilians aged 16 to 17 spend more than 4 hours a day in front of the computer, tablet, or cell phone, in their free time, in addition to hours of virtual classes, which contributes to the occurrence of sleeping problems and difficulty concentrating.

In the current study, the number of university students who reported the use of electronic devices was high, as shown in the results. It is considered that in addition to the pandemic being one of the causes of increased use of these items[14], modernization and the technological revolution today have changed the way people organize their lives and determine their habits, to the point that the population needs to use electronic devices constantly in their daily lives[15].

However, the excessive use of these devices can cause harm to health, such as decreased levels of physical activity, obesity, tiredness, stress, difficulty concentrating, musculoskeletal pain, and headaches[2]. According to the Surveillance of Risk and Protection Factors for Chronic Diseases by Telephone Survey (VIGITEL), the use of a computer, tablet, or cell phone during free time for a period greater than or equal to three hours a day is considered a risk factor for the development of CNCDs[12].

Dias, Arruda, and Lima[7] evaluated 120 university students from undergraduate courses in the health area and observed that the main activities carried out in their free time by academics were sleeping (40.83%), interacting on social networks (36.66%), and accessing photo apps and Instagram (36.66%). It was also concluded that the unbridled and unregulated use of screens can negatively interfere with physical, emotional, and mental health, in addition to impairing intellectual learning and productivity.

Furthermore, evidence indicates that the misuse of electronic devices can cause cognitive impairment in long-term learning, such as a decrease in memory functioning, which is essential for knowledge retention and, consequently, for learning. This can be explained by the ease of searching for information on the internet, without the need for effort to process and remember them, thus generating cognitive overload, fickleness in long-term memory, and difficulties in retrieving information, in addition to multitasking behaviors that can lead to difficulties in filtering information, distractions, and increased impulsivity[16,17].

It is understood that the results of this research positively demonstrated the practice of physical activity, but negatively demonstrated the excessive use of electronic devices. Therefore, it is important to encourage reflections on the need/importance of adopting healthy lifestyle habits, which can have a positive impact on health promotion/disease prevention.

The need to warn students about the risks of a sedentary lifestyle, excessive use of electronic devices, the importance of physical activity and the conscious use of screens for less than 3 hours a day in free time for control and prevention of CNCDs[6,12] is highlighted. The WHO provides guidelines that guide and encourage the population to remain physically active, with the practice of physical activities even in the home environment and small daily actions as a way of coping with social isolation, among which we suggest performing pleasant physical activities, in home spaces, sports, games, and exercises that promote energy expenditure higher than the resting condition, all replacing screen time use[18].

Therefore, it is also necessary to disseminate knowledge about CNCDs in the university environment, for example, the study

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by Mohan *et al.*[19] which describes strategies such as the development of seminars, courses, workshops, and videoconferences, in order to address the epidemiology, factors of risk, forms of prevention, and the construction of original projects, with the participation of the entire academic community, which can have a positive impact on the prevention and control of CNCDs in this group.

The relevance of the theme addressed in this research is highlighted, given the adverse situations such as social distancing caused by the COVID-19 pandemic, which made it difficult to apply the questionnaire in person. The limitations of this study may be related to memory bias due to the use of self-reported data, the use of a non-validated questionnaire, and the sample size.

CONCLUSION

It is concluded that during the COVID-19 pandemic, 63 (72.4%) students practiced some type of physical activity. Regarding frequency, 53 (60.9%) reported practicing at least once a week and 21 (24.1%) 3 to 4 days a week. As for the use of electronic devices, 80 (92.0%) of the students reported using them in their free time.

The findings of this study indicate that most students practice physical activities and remain active even during the restrictions imposed during the pandemic period. However, some of the university students reported insufficient practice of physical activity and most reported a high frequency of using electronic devices in their free time.

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All authors read and agreed with the published version of the manuscript.

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