

## VIRTUAL DEPENDENCE IN MEDICAL STUDENTS AT AN EDUCATIONAL INSTITUTION IN VITÓRIA

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**Abstract: Introduction:** Internet addiction is a disease that has recently emerged due to the online scenario. It is defined as deterioration in control over Internet use that manifests itself in cognitive, behavioral areas and psychological symptoms. The lack of knowledge about this dependence means that many persist in this disorder, bringing to light the need to recognize and identify it among undergraduate medical students. **Objective:** Evaluate how often medical students at a higher education institution use the internet. **Method:** individual cross-sectional study, carrying out a data collection stage that took place at the Escola Superior de Ciências da Santa Casa de Misericórdia de Vitória (EMESCAM), in the first month of the 2021/2 semester, involving students from the 1st to the 12th of medical degree. Students with active enrollment, of both sexes and who agree to sign the free and informed consent form (TCLE) were included. Students who did not sign the TCLE and those under 18 years of age were excluded, as well as incomplete questionnaires or those with filling errors. The study applied two anonymous questionnaires, one with general information and the other being an adaptation of the “Internet Addiction Test (IAT)” questionnaire. Categorical variables were analyzed using frequencies and percentages, and numerical variables using data summary measures such as mean, median and standard deviation. The association between variables was performed using the chi-square test or Fisher’s exact test and were considered significant if  $p\text{-value} < 0.05$ . Subsequently, the results were compared between the three different cycles (basic, clinical and internship) of the Medicine degree. **Results:** Among the 212 respondents, the comparison of cycles in relation to the general score obtained in the Internet Addiction Test did not indicate a significant difference between them, with  $p > 0.05$ . Likewise, when dividing by sex, the

results did not obtain divergent values capable of generating analysis. Furthermore, no other variable studied showed disagreement and the ability to be analyzed. Although severe levels of addiction as well as the absence of internet addiction were less prevalent among participants, the majority of students who participated in the research demonstrated low and moderate levels of internet addiction, alarming data considering the damage that this addiction can cause to the process of learning, hindering medical training. **Conclusion:** It can be concluded that the virtual dependence of medical students at an educational institution in Greater Vitória is low but present. Therefore, due to the growth of pathologies involving addictions, even if low, on the internet, it is important to pay attention to the teaching staff and other employees, in order to mitigate these effects of addiction on students and medical training. **Keywords:** Internet; medical students; internet addiction.

## INTRODUCTION

What is known today as the Internet emerged in the mid-1960s and 1970s as a network project in the United States of America (USA) and Western Europe. The need for equipment that sought to solve Western security led numerous American researchers from the United States Department of Defense to develop ARPANET, a long-distance telecommunications network which connected computers distributed throughout the North American territory. However, what was not predicted at that time was that this invention would be the original mold for what we currently call the Internet, bringing countless benefits and harms to everyday life, such as dependence or addiction. (GLOWNIAK, 1998)

The problematic use of the Internet does not rule out all its scientific, technological advances and even for human life in general, but it raises as an issue the various risks that this online universe can bring to each individual (ČERNJA; VEJMELKA; RAJTER, 2019). In this sense, it is essential to mention Internet Addiction as a disease that has emerged relatively recently due to the online scenario.

This pathology was recognized as “Internet Addiction” for the first time in 1995 by the American psychiatrist Ivan Goldberg, but since then it has received numerous terminologies such as “compulsive internet use”, “pathological Internet use”, “problematic internet use”, among others. Thus, following Goldberg’s thoughts, psychologist and specialist in Internet addiction, Kimberly Young, defined this disease as the deterioration in control over Internet use, which manifests itself in the cognitive, behavioral areas and with psychological symptoms. For Young, a person is dependent on this technology when its extensive online use causes any type of distortion in their person, such as in the family, personal or professional aspects (CAPETILLO-VENTURA; JUÁREZ-TREVIÑO, 2015).

Alongside this phenomenon, internet addiction is a pathology recognized worldwide by medical professionals and health practitioners, however the World Health Organization has not yet included this addiction in the official classification system for mental illnesses and disorders, as well as in the International Classification of Diseases. In this sense, it is also worth highlighting that even though Internet addiction is not official as a disorder, in 2018 ICD 11 was presented and brought virtual gaming disorder as a psychiatric illness, which opens the door for measures to be taken seeking care for the entire environment. online (ČERNJA; VEJMELKA; RAJTER, 2019).

In general, most medical curricula do not address the issue of Internet addiction. Therefore, based on this reality, the lack of knowledge about this increasingly recurrent dependence in the present time causes many to persist in this disorder, which brings to light the need to know about this possible disorder among undergraduate students in medicine. Therefore, a study with the objective of analyzing virtual dependence in medical students at the Escola Superior de Ciências da Santa Casa de Misericórdia de Vitória is essential for collecting data in order to corroborate the non-neglect of excessive use of the internet in the academic environment.

## **METHOD**

The project consists of a cross-sectional study, carried out by applying two questionnaires, involving students from 1st to 12th with active enrollment in the Medicine degree at the Escola Superior de Ciências da Santa Casa de Misericórdia de Vitória (EMESCAM). Data collection was carried out from the first to the twelfth period, and, from a universe of 894 students, 212 responses were used for data analysis and construction of results

## **INCLUSION CRITERIA**

Students with active enrollment in the undergraduate Medicine course at the Escola Superior de Ciências da Santa Casa de Misericórdia de Vitória, of both sexes and who agree to sign the free and informed consent form (TCLE).

## **EXCLUSION CRITERIA**

Students under 18 years of age and those who do not sign the TCLE. Additionally, students who do not complete questionnaires completely or who make filling errors.

## **DATA COLLECTION AND INSTRUMENTS TO BE USED**

The study proceeded by applying two questionnaires, one for general information (ANNEX A) and the other “Internet Addiction Test”, which is an adaptation of the “Internet Addiction Test (IAT)” questionnaire (ANNEX B). The application took place according to the class schedules of each period or in a virtual environment using Google Forms, and in the same time interval - in the second academic semester of the 2021/2 semester.

The Internet addiction questionnaire was anonymous, consisting of 20 questions, with multiple answers with a specific score for each alternative, as follows: 0=Not applicable; 1= Rarely; 2= Sometimes; 3= Often; 4= Very common, 5= Always. The result obtained by students in the questionnaire will undergo a quantitative analysis according to each answer option, considering the total score obtained in the questionnaire. The maximum test score varies from 0 to 100 and each research participant can be classified into different categories depending on the score achieved. Results from 0 to 19 indicate the absence of addiction, from 20 to 39 indicate a low level of addiction and a habitual online user, from 40 to 69 represent a moderate level of addiction while results from 70 to 100 indicate a severe level of addiction. internet addiction. Subsequently, the results were compared between the three different cycles (basic, clinical and internship) of medical graduation.

## **DATA ANALYSIS METHODOLOGY**

Categorical variables were analyzed using frequencies and percentages, and numerical variables using data summary measures such as mean, median and standard deviation. The association between variables was performed using the chi-square test or Fisher’s exact test (in the case of expected values lower than 5 and tables in 2 x2 matrix form). Associations

were considered significant if p-value < 0.05. The data were tabulated in an EXCEL spreadsheet and analyzed using the IBM SPSS Statistics program (Statistical Package for the Social Sciences) version 27.

## **ETHICAL IMPLICATIONS**

This study is committed to all the guidelines and standards proposed in resolution No. 466/2012, which ensures respect, ethics, human dignity and protection due to participants in scientific research involving human beings.

The absolute confidentiality of the information is ensured by the entire team of researchers, who will guide their actions by paying attention to the personal information of the participants, using it only in scientific studies, without any identification.

This proposal is approved by the EMESCAM Research Ethics Committee, located at Av Nossa Senhora da Penha, number 2190, Bela Vista, Vitória – Espírito Santo, under number 063286/2021

## **RESULTS AND DISCUSSION**

212 students participated in this study, 29.2% from the basic cycle, 47.6% from the clinical cycle and 23.2% from the internship. The population was made up of 62.7% women and 36.8% men, with a mean age of  $21.9 \pm 2.9$  years. Among the respondents, 4.7% had already completed another higher education or technical course in the health area.

Regarding their own suspicion of internet addiction, without breaking it down by cycle, 69.3% stated that they had already suspected a related addiction, while 30.7% indicated that they had never had this suspicion.

As demonstrated in Appendix 1, the comparison of the cycles in relation to the general score obtained in the Internet Addiction Test did not indicate a significant difference between them, with  $p > 0.05$ . Thus,

demonstrating that the cycle in which the student is inserted does not correlate with the results of internet addiction research. Therefore, the primary outcome expected in this study is discarded, which was to observe the relationship between medical school cycles and the proportional decrease in addition to the virtual world. Even so, we also attempted to link the results of the questionnaire with the sex of the study participants, however, the hypothesis was not confirmed either, considering that there was no more evident difference according to each sex, as the value of P was  $> 0.5$ . Furthermore, it is essential to highlight that, although we did not obtain any correlation between the test results and the other variables that we set out to identify and analyze, the overall average performance of all the students who participated demonstrated low and moderate levels of addiction, with those being rare. Students who were classified as lacking this addiction or with severe addiction.

In disagreement with the data obtained in this study, CAPETILLO-VENTURA; JUÁREZ-TREVIÑO, 2021 and CHATTERJEE; KAR, 2021, state that men spend more time using social networks and smartphone devices, which can even disrupt their sleep cycle; making clear a state of dependence. In fact, this comparison between the sexes is often seen in articles, however, in our study it was not possible to identify such a correlation.

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Such results suggest that the majority of scores, even at a low or moderate level of addiction, may demonstrate concern about the consequences that this addiction during college tends to cause in the student.

## CONCLUSIONS

It can be concluded that the virtual dependence of medical students at the Escola Superior de Ciências da Santa Casa de Misericórdia de Vitória is low. Although 14.2% of the total sample had no internet addiction and 0.5% had severe addiction, the majority of participants in our research were classified at the low level (54.7%) and also at the moderate level (30.7%). These data highlight the importance of care for addiction in the “online” environment, so that they are included more incisively within the scope of medical graduation; since this disease of the virtual world grows exponentially, mainly explained in the contemporary context of globalization and improvement of technologies in this area.

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## ATTACHMENTS

### ANNEX A

#### General data:

Age: \_\_\_\_\_

Gender  Feminine  Masculine  Other

Current period of graduation: \_\_\_\_\_

Have you already taken another higher education or technical course in the healthcare field?

Yes  No

If yes, which one? \_\_\_\_\_

Extracurricular knowledge:

Have you ever participated in any extracurricular activities with the theme of Internet addiction? (EXAMPLES: Leagues, courses, lectures, conferences)  Yes  No

Ever suspected you were an Internet addict?  Yes  No

Have you ever taken an online or medically supervised test to check whether you qualify for Internet addiction?  Yes  No

### ANNEX B

#### Internet Addiction Test

How often do you find that you spend more time on the internet than you intended?

No  Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do you abandon household chores to spend more time on the internet?

No  Not applicable;  Rarely;  Sometimes;  Frequently;  Very common;  Ever.

How often do you prefer the excitement of the internet to intimacy with your partner?

No  Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do you create relationships with new internet friends?

No  Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do other people in your life complain about the amount of time you spend on the internet?

No  Not applicable;  Rarely;  Sometimes;  Frequently;  Very common;  Ever.

How often do your grades or schoolwork get worse because of the amount of time you spend on the internet?

No  Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do you check your email before anything else you need to do?

No  Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often does your performance or productivity at work worsen because of the internet?

No  Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do you get defensive or secretive when someone asks you what you do online?

No  Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do you block out disturbing thoughts about your life by connecting to calm

yourself?

No Does not apply;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do you find yourself thinking about when you will go online again?

No Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do you fear that life without the internet would be boring, empty and dull?

No Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do you explode, scream or get angry if someone bothers you while you are online?

No Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do you get little sleep because you stay connected late at night?

No Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do you feel worried about the internet when you are disconnected, imagining that you could be connected?

No Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do you find yourself saying “just a few more minutes” when you’re online?

No Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do you try to reduce the time you spend on the internet and fail?

No Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do you try to hide the amount of time you are on the internet?

No Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do you choose to spend more time online instead of hanging out with other people?

No Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

How often do you feel depressed, moody or nervous when disconnected and this feeling goes away as soon as you connect to the internet again?

No Not applicable;  Rarely;  Sometimes;  Frequently;  Very frequently;  Ever.

## APPENDICES

		Average	Standard deviation	Median	Minimum	Maximum	N valid	p
General	Basic	3,2	1,7	3,0	0	7	176	0,000*
	Clinical	3,6	1,4	4,0	0	8	183	
	Boarding school	4,0	1,2	4,0	1	7	161	
Therapeutic	Basic	1,3	0,8	1,0	0	4	176	0,000*
	Clinical	2,0	1,4	2,0	0	7	183	
	Boarding school	2,2	1,5	2,0	0	7	161	
Total	Basic	4,5	2,0	4,0	1	9	176	0,000*
	Clinical	5,6	2,3	5,0	1	13	183	
	Boarding school	6,1	2,1	6,0	2	12	161	

Appendix 1. Comparison between cycles in relation to general, therapeutic and total scores.

Kruskal-Wallis \*p < 0,05

	Standard deviation	Average	Minimum	Maximum	Median
Geral	1,5	3,6	0,0	8,0	4,0
Therapeutic	1,3	1,8	0,0	7,0	1,0
Total	2,2	5,4	1,0	13,0	5,0

Appendix 2. Descriptive statistics of General, Therapeutic and Total scores.

	P10	Frequency	Percentage
No		5	1,0
Yes		515	99,0
Total		520	100,0

Appendix 3. Descriptive statistics for P10.

		Therapeutic					N valid	p
	P1	Average	Standard deviation	Median	Minimum	Maximum		
Basic	No	1.2	0.7	1.0	0	4	120	0,009*
	Yes	1.5	0.9	1.0	0	4	56	
Clinical	No	2.0	1.3	2.0	0	6	137	0,626
	Yes	2.2	1.7	2.0	0	7	46	
Boarding school	No	2.0	1.5	2.0	0	7	132	0,003*
	Yes	2.8	1.3	3.0	0	5	29	

Appendix 4. Comparison of the Therapeutic score for P1 in each cycle.

Mann-Whitney test \* $p < 0,05$

		Therapeutic					N valid	p
	P3	Average	Standard deviation	Median	Minimum	Maximum		
Basic	No	1,3	0,7	1,0	0	4	140	0,325
	Yes	1,4	0,8	1,0	0	4	36	
Clinical	No	2,0	1,5	2,0	0	7	167	0,318
	Yes	1,7	1,2	1,0	0	4	16	
Boarding school	No	2,1	1,5	2,0	0	7	135	0,008*
	Yes	2,8	1,3	3,0	1	6	26	

Appendix 5. Comparison of the Therapeutic score for P3 in each cycle.