ANALYSIS OF THE PATHOLOGICAL USE OF THE INTERNET AND ITS ASSOCIATION WITH COMMON MENTAL DISORDERS IN THE UNIVERSITY POPULATION

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ABSTRACT

Communication technologies are implicated in the revolution of people's way of socializing and in their ways of acquiring knowledge. Pathological use of the internet is defined as that which corresponds to negligent and/or obsessive use. Common mental disorders (CMD) represent an important psychiatric concept to designate signs and symptoms of insomnia, fatigue, irritability, amnesia, difficulty concentrating, and somatic complaints that can progress to functional disability. This is a cross-sectional study with a quantitative approach, in which 174 medical students participated in the study at a University in Southern Brazil. Between March and April 2024, three instruments were applied simultaneously: a questionnaire on sociodemographic data, one for the screening of common mental disorders, and the scale for problematic internet use. The level of significance adopted was 5% and the statistical analyses used were performed in the R 4.4.1 environment. Of the 174 participants in the survey, 56.32% were between 18 and 24 years old, 60.92% identified themselves as cis women, and 74.14% mentioned being heterosexual. The prevalence of possible cases of CMD was 72.41%. Staying connected to the internet for longer than they should (p=0.01), failing to do important tasks (p<0.001) and losing hours of sleep to use social networks (p=0.008) are the criteria with a statistically significant association with the classification as possible cases of CMD. Problematic use of the internet, especially in relation to excessive connection time, prioritization of social networks to the detriment of important tasks, and loss of sleep hours, demonstrated a statistically significant association with the classification of participants as possible cases of CMD, reflecting a high prevalence of these disorders in this study.

Keywords: Internet Use, Mental Disorders, Students.

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INTRODUCTION

Communication technologies are implicated in the revolution of people's way of socializing and in their ways of acquiring knowledge[1]. The first study addressing the use of the internet was published in 1992[2]. At that time, when this resource was a technological novelty, the focus of publications was directed to the benefits of the internet for various social contexts. However, four years after this publication, in 1996, the first study was released addressing the negative aspects of this new technology, associating it with a "new medical disorder", when its use could not be controlled by the user[3].

Currently, the benefits and harms related to the use of the internet have been even more discussed, especially in the areas of social communication, education and health. In the field of health, the development of telemedicine has become an increasingly consolidated alternative after the COVID-19 pandemic, evidencing a positive intersection between the health and technology sectors[4]. On the other hand, there are also strands of studies on the impact of the internet on the development of mental, physical and psychosomatic pathologies[5], in addition to proving the association between the pathological use of the internet and the development of violent behavioral stereotypes in adults and, more prominently, in children and adolescents[6].

Pathological use of the internet is defined as that which corresponds to negligent and/or obsessive use. Negligent use refers to the prolonged period of connection to technology, capable of generating a negative impact on daily activities and relationships. Obsessive use, in turn, leads the user with the uncontrollable need to use the internet, and its non-use can lead to signs and symptoms of withdrawal[7].

Common mental disorders (CMD) represent an important psychiatric concept, postulated by Goldberg and Huxley in 1992, to designate signs and symptoms of insomnia, fatigue, irritability, amnesia, difficulty concentrating, and somatic complaints that can progress to functional disability[8]. In addition, current authors recommend that these clinical presentations may be associated with chronic stress and subclinical conditions of generalized anxiety disorder (GAD) and major depressive disorder (MDD)[9]. Patients with any of the disorders mentioned above are more likely to acquire addiction to the internet, since the pathological use of this technology is associated with varying degrees of reduced sociability, one of the characteristics of CMD and MDD[10,11].

With regard to GAD, its symptoms can be intensified after prolonged exposure, especially to social media and *online games* present in the internet environment[12]. Stress,

in turn, provides the escape from reality of its sufferers, who tend to resort to the virtual environment as a compensatory mechanism. In such a way that, in this environment, they may come across situations that maintain this behavior, culminating in a possible addiction[13]. In addition to the psychiatric disorders already mentioned, the pathological use of the internet is related to a higher prevalence of eating disorders[14], suicidal ideation[15], impulsivity and aggressiveness[16].

Therefore, this study is justified due to the relevance of the theme presented and the scarcity of national and international research on emotional chains secondary to the pathological use of the internet, especially in the young population. In addition, the results found in this research can help in the elaboration of awareness policies about the aforementioned media phenomenon, which is on a significant global rise. Therefore, the objective of this study is to analyze the prevalence of pathological use of the internet and its association with the manifestation of CMD.

MATERIALS AND METHODS

ETHICAL ASPECTS

The project was submitted to and approved by the Research Ethics Committee, under protocol number 6.607.803, CAAE 76806324.2.0000.0105. All study participants accepted the Informed Consent Form (ICF) for the research subjects, in accordance with Resolution 466/2012 of the National Health Council (CNS).

STUDY DESIGN

This is a cross-sectional study with a quantitative approach.

POPULATION

The sample universe was composed of a total of 305 medical students from a University in Southern Brazil. The course is held full-time and lasts six years. Students from the first to the sixth grades, regularly enrolled, aged 18 years or older and who agreed to participate in the research were eligible. There were 131 refusals (42.95%), so 174 (57.04%) students participated in the study.

PLACE OF STUDY

The study was carried out at a public university in the southern region of Brazil.

INSTRUMENTS

Three questionnaires were applied to the university students via *Google Forms*, the first referring to sociodemographic and economic data, consisting of questions about age group, gender identity, sexual orientation, color and marital status.

The second instrument was the Problematic Internet Use Scale (SPIU), which contained specific questions about this theme. It was developed in Spain and validated in Brazil, in 2018, by Fonseca et al.[17] . It is characterized by simple questions, the answers to which are provided on a Likert scale: "strongly disagree", "disagree", "neutral", "agree" and "strongly agree". This instrument evaluates the use of the internet in terms of commitment to important tasks, sleep time, perception of time, mood swings, relationship with family and friends, in addition to the frequency of use of social networks.

The *Self Report Questionnaire* (SRQ-20) was the third questionnaire applied to evaluate possible cases of CMD. It is a tool developed to screen for minor psychiatric disorders in primary health care, having been validated in Brazil by Mari and Willians in 1986[18.] It consists of 20 questions, each worth 1 point, and each "yes" answer is assigned this score, making it possible to result in a final score of 0 to 20 points. Male students with a score equal to or greater than 6 and female students with 8 or more points were considered as possible cases of CMD.

DATA COLLECTION

Data collection was carried out between March and April 2024, in a virtual environment through the application of questionnaires via *Google Forms*. The first-year students participated in the research when they were at the beginning of the first academic year, that is, they had entered the course 2 months ago. Among the 174 participants, 50 (89.28%) were in the 1st year, 38 (80.85%) in the 2nd year, 37 (61.66%) in the 3rd year, 36 (60%) in the 4th year, 8 (20%) in the 5th year and 5 (11.62%) in the 6th year. The percentages show the relative attendance of the students in relation to the total number of students in the respective class.

STATISTICAL ANALYSIS

For the statistical analysis, initially, a descriptive analysis of the data was performed with absolute and relative frequencies of the qualitative variables, in addition to the prevalence of CMD among the students. The associative analysis between pathological use

of the internet and being classified as a possible case of CMD was performed using Pearson's chi-square test or Fisher's exact test, considering the answers "agree" and "totally agree". The level of significance adopted was 5% and the analyses were performed in the R 4.4.1 environment[19].

RESULTS

Of the 174 participants in the study, 56.32% were between 18 and 24 years old, 60.92% identified themselves as cis women, 74.14% mentioned being heterosexual, 89.08% were white, and 92.53% were single (Table 1).

Table 1. Sociodemographic characterization of the research participants.

Variable	Categories	N	%	CI & 95%	
				Inf	Sup
Age	18-24 years old	98	56,32	32,65	69,21
	25-30 years	35	20,12	11,25	26,39
	31-35 years	37	21,27	16,12	29,56
	36-40 years	3	1,72	0,52	4,42
	> 40 years	1	0,57	0,09	2,85
Gender identity	Cis man	65	37,36	30,48	54,17
	Cis woman	106	60,92	45,32	69,21
	Non-binary	3	1,72	0,09	2,85
Sexual orientation	Heterossexual	129	74,14	67,19	87,69
	Gay	19	10,92	1,75	17,42
	Bisexual	21	12,07	7,19	25,92
	Pansexual	3	1,73	0,52	4,42
	Asexual	1	0,57	0,09	2,85
	Other	1	0,57	0,09	2,85
Race	White	155	89,08	76,62	97,25
	Black	5	2,87	2,45	8,54
	Brown	12	6,90	5,75	15,90
	Other	2	1,15	0,80	5,15
Marital status	Single	161	92,53	83,61	98,58
	Married	1	0,57	0,09	2,85
	Other	12	6,90	5,75	15,90
& *Lower and upper 95% confidence interval.*					

SOURCE: The Authors, 2024.

Regarding the answers given to the SPIU, the scale of problematic use of the internet, Table 2 shows that most participants considered having lost hours of sleep by staying connected and that they prioritized the use of the internet to the detriment of

performing important work or personal tasks, with the self-perception that they spend more hours than they should on social networks, in addition to considering it essential to use *Facebook, Instagram* or *Twitter* every day.

Table 2. Characterization of university students regarding the pathological use of the internet.

Question	Answer	N	%	IC& 95%	
				Inf	U
I have neglected my tasks by connecting to the internet.	I totally disagree	51	29,30	17,35	36,51
	Disagree	40	23,00	9,92	43,40
	Neuter	26	14,94	5,63	19,84
	Agree	28	16,09	2,96	22,19
	I totally agree	29	16,67	10,27	35,87
I've been failing to do important things so I can stay connected.	I totally disagree	12	6,89	4,12	10,99
	Disagree	10	5,75	2,48	10,85
	Neuter	20	11,50	4,96	21,70
	Agree	47	27,01	14,77	86,21
	I totally agree	85	48,85	37,84	69,21
On some occasions, I have lost hours of sleep by using the internet.	I totally disagree	8	4,59	1,48	9,87
	Disagree	27	15,52	4,29	19,77
	Neuter	2	1,15	0,84	3,69
	Agree	99	56,90	49,75	68,24
	I totally agree	38	21,84	17,96	33,27
Sometimes, I connect more than I should.	I totally disagree	10	5,75	2,48	10,85
	Disagree	3	1,72	1,44	5,96
	Neuter	0	0	0,00	0,00
	Agree	52	29,89	23,14	41,29
	I totally agree	109	62,64	51,29	73,19
When I'm connected, I feel that time passes quickly and when I realize I spent hours on the internet.	I totally disagree	18	10,34	5,24	19,63
	Disagree	24	13,79	4,16	19,87
	Neuter	9	5,17	1,09	14,78
	Agree	78	44,84	33,25	57,69
	I totally agree	45	25,86	14,26	31,48
There are times when I get in a bad mood because I can't connect.	I totally disagree	97	55,75	42,36	68,19
	Disagree	42	24,14	14,23	29,63
	Neuter	2	1,15	0,84	3,69

	Agree	18	10,34	5,24	19,63
	I totally agree	15	8,62	1,26	14,25
There are times when I prefer to stay connected to the internet instead of being with my family or friends.	I totally disagree	87	50,00	41,69	66,24
	Disagree	36	20,69	11,29	27,22
	Neuter	4	2,30	1,96	6,96
	Agree	44	25,29	14,89	36,12
	I totally agree	3	1,72	1,44	5,96
For me, it's important to connect daily to *Facebook*, *Instagram,* or *Twitter*, among other social networks.	I totally disagree	0	0	0,00	0,00
	Disagree	0	0	0,00	0,00
	Neuter	0	0	0,00	0,00
	Agree	6	3,45	1,26	10,27
	I totally agree	168	96,55	82,39	98,57

& Lower and upper 95% confidence interval.
SOURCE: The Authors, 2024.

Table 3 shows the prevalence of CMD among the university students participating in the study. It is observed that, at the time of data collection, 72.41% of the participants were classified as possible cases of CMD, based on the answers provided to the SRQ-20.

Table 3. Prevalence of common mental disorder in the population studied.

Variable	Category	N	%	IC& 95%	
				Inf	U
TMC Rating	No	48	27,59	19,82	32,29
	Yes	126	72,41	49,12	82,11

CMD: common mental disorder.
& Lower and upper 95% confidence interval.
SOURCE: The Authors, 2024.

Finally, Table 4 elucidates that staying connected to the internet for longer than it should (p=0.01), failing to do important tasks (p<0.001) and losing hours of sleep to use social networks (p=0.008) are criteria with a statistically significant association with participants being classified as possible cases of CMD.

Table 4. Associative analysis between the pathological use of the internet and being classified as a possible case of common mental disorder.

Question	Answer	TMC		p-value
		YES	NO	
		N	N	
I have neglected my tasks by connecting to the internet.	Agree	20	8	0,09*
	I totally agree	22	7	
	Agree	42	5	<0,001*

I've been failing to do important things so I can stay connected.	I totally agree	62	23	
On some occasions, I have lost hours of sleep by using the internet.	Agree	65	34	0,008*
	I totally agree	30	8	
Sometimes, I connect more than I should.	Agree	27	25	0,01*
	I totally agree	40	69	
When I'm connected, I feel that time passes quickly and when I realize I spent hours on the internet.	Agree	44	34	0,07*
	I totally agree	17	28	
There are times when I get in a bad mood because I can't connect.	Agree	10	8	0,29*
	I totally agree	7	8	
There are times when I prefer to stay connected to the internet instead of being with my family or friends.	Agree	7	37	0,97#
	I totally agree	1	2	
For me, it's important to connect daily to *Facebook*, *Instagram*, or *Twitter*, among other social networks.	Agree	1	5	0,45#
	I totally agree	41	127	

CMD: common mental disorder.
*Pearson's chi-square test; #Fisher's exact test.
SOURCE: The Authors, 2024.

DISCUSSION

The use of the internet among university students plays a key role in facilitating access to academic information, allowing them to quickly search for relevant content and participate in learning communities. However, excessive and inappropriate use can lead to negative consequences, such as decreased academic performance and constant distractions. In addition, recent studies claim that internet addiction can affect students' mental health, contributing to the development of anxiety, stress, and sleep disorders[20].

The SPIU scale is a validated tool for the assessment of pathological internet use and effective in academic contexts. It allows the identification of problematic behaviors related to excessive internet use, measuring factors such as compulsion, impact on daily life, and emotional dependence. Its application helps in the early detection of harmful use patterns, providing data for targeted therapeutic interventions, aiming to reduce the negative effects of dysfunctional internet use on mental health, academic performance, and quality of life of students[21].

In this study, a high prevalence of CMD was identified among students, with 72.41% classified as possible cases after the application of the SRQ-20. Comparatively, studies with similar methodology and population showed varied prevalences, such as 34.7% in Fortaleza[22], 60.1% in Jundiaí during the period of the COVID-19 pandemic[23], 45.6% in Vila Velha[24], 40.0% in Foz do Iguaçu[25], 44.9% in Botucatu[26], 26.1% in Vale do Paraíba[27],

and 19.3% in Tubarão[28]. At the international level, a study conducted in Jordan found a prevalence of 65.7%[29].

The variations in the prevalence of CMD among the studies can be explained by several contextual and methodological factors. Differences in the demographic and socioeconomic characteristics of the populations studied, such as age, gender, socioeconomic status, and access to mental health services, may influence the results. In addition, the impact of the COVID-19 pandemic may have increased the incidence of CMD in the study carried out with students in the city of Jundiaí[23]. Cultural and regional aspects, such as the stigma associated with mental health and the availability of social support, may also contribute to these disparities, as observed in the differences between studies conducted in Brazil and Jordan[29].

The self-perception of university students about the excessive time connected to social networks was a significant factor found in this survey. Although the SPIU scale did not establish a specific time limit to define this behavior, the data showed that many participants prioritize internet use over important work or personal tasks and often lose hours of sleep by staying connected. These findings suggest that the use of the internet may be used as an escape mechanism from everyday stress.

Regarding the prioritization of the internet as opposed to relevant activities, whether professional, academic or personal, it is believed that the digital connection can work as a form of temporary relief for stress. A study conducted in Japan in 2019, which investigated internet addiction and depression among college students, revealed a two-way relationship between internet use and stress: students turn to the internet to relieve stress, which in turn can reduce sociability and deteriorate existing social relationships, further increasing stress and perpetuating the cycle of addiction[10]. This dynamic can also be observed in the procrastination of academic responsibilities, where the postponement of tasks generates more stress and reinforces the use of the internet as a form of escape, which is reflected in the participants' perception of the need to access social networks daily.

In addition, a systematic review by Hale and Guan[30] indicated that most studies point to a negative relationship between screen use and sleep quality. This relationship is evidenced by the reduction in total sleep time, physical and mental agitation due to the content consumed and possible social interactions, in addition to the interference of the light emitted by the devices in the circadian cycle. In accordance with the systematic review

by Hertenstein et al.[31], insomnia increases the risk of psychopathologies, especially depression, evidencing the association between sleep disorders and CMD.

The sample of this study was composed only of university students from a specific institution, which may limit the generalization of the findings to other populations or academic contexts. In addition, the use of self-administered questionnaires may be subject to reporting bias. The cross-sectional nature of the study also precludes the establishment of direct causal relationships between problematic internet use and CMD. Finally, other potentially influencing factors, such as pre-existing cultural, family, and health aspects, which could impact the prevalence of CMD and pathological behavior of internet use, were not evaluated.

Consequently, the problematic use of the internet, especially in relation to excessive connection time, the prioritization of social networks to the detriment of important tasks, and the loss of sleep hours, demonstrated a statistically significant association with the classification of participants as possible cases of CMD, reflecting a high prevalence of these disorders in this study. These findings highlight the need to promote interventions aimed at the conscious use of the internet, as well as strategies for psychological support and prevention of mental health problems among university students.

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