TECNOSTRESS IN HIGHER EDUCATION STUDENTS: AN EXPLORATORY STUDY

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Abstract

The ubiquitous presence of technology in daily life brings both beneficial and detrimental consequences, with technostress emerging as a significant concern that is induced by technology use. Symptoms encompass physical, psychological, and behavioral aspects. Given that, university students are constantly engaged in activities and interacting with various individuals, it is imperative to identify technostress symptoms and assess their perceptions of technology use. This research intervention is tailored to the realities and needs of students. We employed a semi-structured interview approach with a sample of 120 university students from a public university. Participants were first asked about their use of technology, followed by a questionnaire comprising 27 physical, psychological, and behavioural technostress symptoms. Participants indicated symptoms experienced in the last two years. The top three reported symptoms were “anxiety", “stress”, and “mental fatigue". Furthermore, 55.55% of participants expressed feelings of addiction or dependence by spending time on electronic devices, pervasive across various life domains. These findings underscore the need for further investigation into the extent of technostress among university students, with implications for the development of measures to mitigate its adverse effects.

Keywords: Technostress symptom’s, Higher Education, Technology.

1 INTRODUCTION

Technology has an increasingly significant role in everyday life, presenting both benefits and challenges. While technological advancement has enabled important innovations, such as remote learning during the pandemic, it has also brought about the phenomenon of technostress, which can have adverse impacts on the physical and mental health of users [1]. The term "technostress" first originated in 1984 to describe the stress caused by excessive or inappropriate use of technology, leading to difficulties in healthy adaptation [2]. The COVID-19 pandemic significantly accelerated the adoption of Information and Communication Technologies (ICTs) across all sectors, including higher education. This rapid shift towards online learning platforms due to lockdowns and social distancing measures has undoubtedly increased students' reliance on technology for academic activities. Academic literature has discussed this concept, highlighting the negative impacts of technology use on individuals' health and well-being.

[3] and [4] emphasize the harmful effects of technostress on physical and psychological health. These impacts can manifest in various ways, including tendencies towards sedentary behaviour, social isolation, heart problems, anxiety, loneliness, and obesity. Technostress can negatively affect the emotional, social, cognitive, and physical development and maturation of individuals.

Additionally, the change and expectations in the year of entering university, often for a course that was not desired, pose additional challenges in a new phase that can already be difficult. Most of your high school colleagues and friends have chosen different paths, and your actions from now on will usually determine your career path and affect other aspects of your life.

In a new, challenging, and demanding context upon entering university, it is normal for stress levels and anxiety to increase. After all, we are talking about a transitional phase in the life of any student, who will now embark on a long journey and base their expectations and future career projects on the completion of a higher education course.

The university context is a rich environment of challenges and opportunities, and it is necessary for students to maintain a balance between their motivations and personal interests and the demands of the new environment they are going to face. While some students perceive changing contexts as an opportunity to enhance their personal development skills, for others, it reflects a climate of heightened anxiety and competitiveness, leading to situations that cause stress. Due to the university being in a new context with higher demands, responsibility, and autonomy, it is understandable that new students may not initially have the appropriate responses to deal with the sources of stress present. There are numerous sources of stress associated with the university environment and this new phase of life, for example: anxiety during exam or assessment periods or when presenting projects; social anxiety due to meeting a new group of peers and a sense of belonging; leaving home or moving to a new city; fear of failure; pressure to make a lifelong career decision.

Each person deals with stress differently, and therefore, it can affect us at various levels. Symptoms of stress can range from psychological to behavioural to physiological changes, such as: Physical symptoms: reduced energy levels, fatigue, weight fluctuations, headaches, muscle tension, insomnia, palpitations; Behavioural symptoms include changes in appetite and nervous tics. Emotional symptoms: anxiety, sadness, depressed mood, excessive irritability, feelings of low self-esteem, social isolation, inability to relax, pessimism; Cognitive symptoms: persistent worry, changes in attention or concentration, forgetfulness, disorganization.

[5] Boyer-Davis (2020) found that students experienced a lot more technostress during the pandemic compared to before, showing how important it is as a health issue for this target group. However, there are not many studies on technostress in the Portuguese context, and most of them focus on the general population or specific groups, such as health professionals. It is essential to understand how burnout and technological stress affects students' health and well-being, especially when access to health services is limited. While most Portuguese higher education institutions have a psychological support office for students, their services usually do not address occupational psychology specifically [6] (Andrade et al., 2021). Since the first lockdown, there have been new waves of COVID-19 infections, leading to rapid changes in public health policies and restrictions. While the immediate impact of the pandemic is well documented, the consequences of such prolonged uncertainty are yet to be fully evaluated.

Furthermore, students in higher education are increasingly engaging with digital technologies in their academic activities. Excessive dependence on these technologies can increase the risk of developing technostress among students, affecting their academic performance and overall well-being. Educational institutions and professionals in the field of education must be aware of the negative impacts of excessive technology use on higher education students, given the growing challenges associated with technostress. We must implement prevention and intervention strategies to promote healthy technology use and mitigate the adverse effects of technostress in the academic community.

Therefore, to understand the main symptoms that students are facing, we conducted this exploratory study.

METHODOLOGY

In order to meet the proposed objective, we opted for an exploratory study with a qualitative approach by collecting data through semi-structured interviews [7] (Gil, 2002) with 120 university students of both sexes aged between 18 and 35 (average age 25). At a public university, the students enrolled in various courses, with forty (40) specializing in technology, fifty-eight (57) in social sciences, and twenty-three (23) in architecture.

We conducted individual and remote video conference interviews, asking the students about their personal experiences with technology. The authors developed a questionnaire during the interviews, which included 27 physical, psychological, and behavioral symptoms associated with technostress as reported in the literature. Each participant was required to identify which symptoms they had experienced in the past year. It is worth noting that the interviews took place in 2023, over a period of four months (March, April, May, and June).

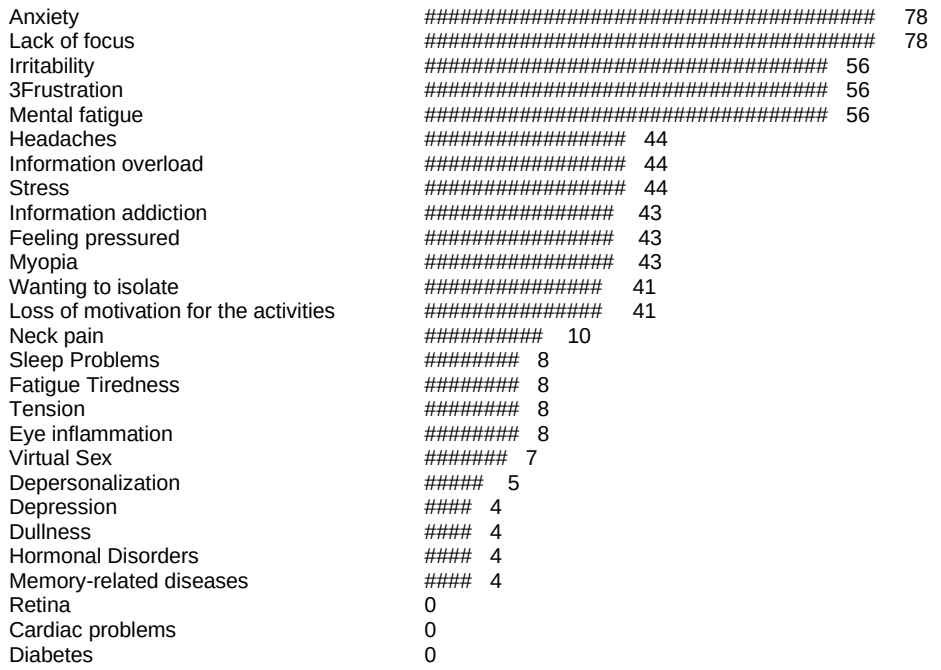
We transcribed the verbal reports from the interviews and applied a qualitative analysis process, focusing on content analysis [7] (Gil, 2002), to identify and explore the participant's relationship with technology use. The data from the symptoms' questionnaire was tabulated and quantified to identify and characterize the main symptoms perceived by the participants.

2 RESULTS

The characterization of the students and by establishing an average of the data, we obtained that the age of the participants is 25 years, 61.11% are female, 38.88% are male, and 45.55% work. Based on the symptom's questionnaire, it was possible to draw up Figure 1, which shows how many participants reported having the symptoms listed. We found that, in descending order, the most reported symptoms were "being present only with the body (lack of focus)" and "anxiety" with 78 participants; "mental fatigue," "frustration," and "irritability" with 56 participants; "stress," "information overload," and "headaches" with 44 participants; "myopia," "feeling pressured," and "information addiction" with 43 participants; "loss of motivation for the profession" and "wanting to isolate" to get away from others" with 41 participants; and "neck pain" with 10 participants.

The highest scores of symptoms were found with 13 symptoms in the male participant and 11 symptoms in the female participant, both of whom already had the habit before the pandemic of spending the entire day in contact with technology, varying the usage between different areas of life such as remote learning, watching series, communicating, social media, and "working". Among the seven participants who mentioned engaging in virtual sex, all were male. However, due to the fact that they did not elaborate on their responses, specifying whether virtual sex occurred within a marital relationship or through online platforms, it is not possible to conclude whether there is a correlation with existing literature data, in which males are predominant in consuming pornography, or with the data suggesting that the pandemic has increased pornography consumption [8], [9] (Muraro, 2018; Sato, 2021).

Figure 1 – Symptoms Distribution

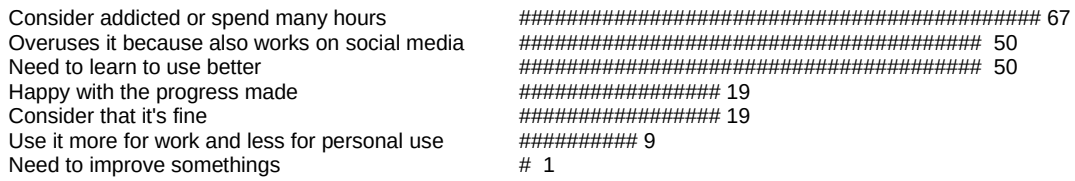


Source: Authors elaboration

In figure 2, we present the moment when participants were asked "how they felt about their own use of technology," with 67 participants, constituting 55.55% of the sample, considering themselves addicted to or dependent on technology or spending many hours using it. The reasons vary from feeling that they might receive an important message at any moment to not being able to stay away from their phones,

using technology in many areas of life, or not specifying. All the participants reported feeling that the pandemic had increased their contact with technology, turning it into a channel that encompasses contact with people, work, study, and leisure. This is in line with the data from the Employee Assistance Professionals Association [10], which expected an increase in the number of users due to the pandemic. Among the eighteen participants who reported feeling the need to reduce the time they spend using technology, only one considers that they use it a lot, while seven are currently low-time users and show interest in reducing even further. One participant reported that they would increase their use of technology for work to achieve greater engagement with the materials posted on social media and consequently increase their sales and would decrease the time spent using technology for leisure, even though they are the participant who uses technology the least and has fewer symptoms. Fifty participants considered that they use technology excessively because they work on social media. Vieira and Gonçalves [11] (2019), who reported discomfort regarding notifications, corroborate the participant's experience of feeling scattered by notifications. Therefore, the participant believes that it is necessary to review how they can improve in this regard. Nineteen participants reported feeling happier each day regarding their use of technology because they were able to change the way they use it, self-observing and directing their usage in a way that they do not blame themselves, being aware of how they use it and what still needs to be adjusted, so they devise ways to make adjustments and test whether they will work or not, without putting pressure on themselves, just experiencing. At the same time, understanding the function of algorithms, being aware of how they work, using them to their advantage, and choosing whether, or not, to provide information for the industry to work with. Lastly, one participant reported feeling the need to improve their use of technology because they feel that they do not understand some tools and often find themselves slow with them, so they would like to seek courses and ways to enhance their own use of technology.

Figure 2 – Feelings about the use of Technology



Source: Authors elaboration

3 CONCLUSIONS

In front of the objective of identifying the symptoms of technostress presented by university students and how they feel about their own use of technology, it was possible to identify that the most reported symptoms of technostress were "being present only with the body", "anxiety", "mental fatigue", "frustration", "stress", "information overload", "headaches", "myopia", "feeling pressured", "information addiction", "loss of motivation for the activities," "wanting to isolate" and "neck pain." Regarding how they felt about their own use of technology, they considered themselves addicted to or dependent on technology or spent many hours on it, with only some of them among the 120 participants considering that their usage had increased due to the pandemic. Based on the data presented, among the possible outcomes, actions and interventions stand out, such as discussions and campaigns on the subject to raise awareness about technostress and preventive and remedial interventions with university students, as they presented a significant number of symptoms, reflections, and discussions in the business sector regarding the production of technology and tools that promote mental health, among others. In today's societies, people's daily lives are very busy, with countless worries, tasks, and adversities. We live in constant stress. This situation reduces people's health and quality of life. Pre-university students are particularly sensitive to this problem since, in addition to the typical changes of adolescence, they are confronted with various stress factors, particularly with regard to issues related to future entry into higher education, like transformations typical of adolescence, self-esteem problems, national exams, access to higher education, financial issues, time management, a possible move to another city, a possible separation from family and friends, expectations of family and friends, and family support.

It is therefore very important to train students in the various aspects of stress, making them aware of the causes and symptoms of this complex physiological process. We also present strategies for managing

and combating stress, fostering a healthier coexistence with this reality. The negative influence of stress is widespread throughout society.

In university teaching, stress can reach damaging levels, compromising students' academic and personal lives. It was therefore essential to learn about the causes and symptoms of this problem, considering that information technologies will increasingly be present in the lives of human beings and, consequently, technostress will follow the same trend. It is necessary to conduct research on the topic, especially in Portugal, where few studies have been conducted, to create strategies to decrease this problem.

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