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Positive and negative aspects of remote learning during the COVID-19 pandemic in the view of Brazilian university students who received university assistance

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Introduction: The COVID-19 pandemic generated concerns about people's life and future globally. Regarding education, students worldwide faced problems (personal, social and/or economic) to continue studying. In this study, we investigated the perceptions of Brazilian undergraduate students who received university assistance during the COVID-19 pandemic, examining the positive and negative aspects of remote learning and assessing the impact of the assistance on student retention at the university.

Methods: 127 students participated in the study. Data was obtained through an online survey. The snowball technique was used to collect data.

Results: Being close to family, reduced expenses on campus, flexible schedules, and the ability to review lessons and related materials outside of class were the positive factors listed by the students. These positive factors may have contributed to reducing stress caused by COVID-19, increasing student retention and course completion rate, and improving student's quality of life. On the contrary, participants reported negative aspects, such as lack of internet access, excess of activities, concerns about teaching quality, inadequate study environments, family-related problems, and insufficient materials and technology tools.

Discussion: Despite the fears and insecurities, the pandemic brought to the students, our study found that the help offered by the university to students proved to be beneficial, positively impacting student development and retention. Notably, 89 participating students (70.08%) completed all courses without experiencing any personal, social, or educational setbacks caused by the pandemic.

KEYWORDS

remote learning, university assistance, COVID-19, university students, pandemic

1 Introduction

The infectious disease COVID-19, caused by the new coronavirus (Sars-CoV-2), was first discovered in late 2019 in China and quickly became a pandemic, as it spread across the four continents of the globe (Ciotti et al., 2020; Wang et al., 2020). SARS-CoV-2 is a beta-coronavirus that can be transmitted to humans through intermediate hosts (Paules et al.,

2020). Once infected, the coronavirus can spread to another individual through contact with droplets contaminated with the virus (Li et al., 2020). Considering its transmission characteristic, the World Health Organization (WHO) stated that social isolation was the primary method to prevent COVID-19, leading to the suspension of non-essential activities globally (World Health Organization, 2020).

In the global context, universities were forced to stop in-person classes, since the transmission of COVID-19 increased exponentially, causing widespread concern (Candido et al., 2020; Evans et al., 2020; Odriozola-González et al., 2020; Nicoletis et al., 2021). As a result, it is estimated that 90% of students around the world had their classes suspended, which marked the largest disruption of the teaching-learning process in world history (Albuquerque et al., 2022; Fior and Martins, 2020; Neves et al., 2021; Hammerstein et al., 2021). Brazil was no exception. Face-to-face classes at Brazilian universities were suspended, starting in March 2020, due to the need for social isolation.

Thanks to the internet and technology, despite the interruption of face-to-face classes, most educational activities were transitioned online, which was considered emergency remote learning (Neves et al., 2021). Remote learning is defined as a form of education in which teachers and students are physically separated during instruction, with communication occurring through technologies (Masalimova et al., 2022). The rapid evolution of the COVID-19 pandemic on the entire planet and the complex infrastructure of the universities left professors and students with little time to prepare for the unexpected and sudden shift from face-to-face to remote learning. This abrupt change led to numerous challenges. Albuquerque et al. (2022) reported that Portuguese college students faced limited access to essential equipment such as laptops and reliable internet, lack of suitable workplaces, difficulties with online assessments, potential negative impacts on student grades, reduced opportunities for social interaction, lower self-confidence, and concerns about the pedagogical quality due to the sudden transition.

In Brazil, as the literature points out, the abrupt demand to migrate to remote learning, caused by COVID-19, significantly intensified existing issues in university education, such as the heterogeneous profiles of the students, the expansion of teaching, and student retention (Fior and Martins, 2020; Braga et al., 2021; Rosa et al., 2021). In addition to the direct impacts on teaching and learning, the pandemic also led to sudden changes in the ways of living and people's roles in society, which directly affected people's physical and mental health, family life, and work (Hwang et al., 2020; Holmes et al., 2020; Braga et al., 2021; Worsley et al., 2021; Haanes et al., 2024; Powell et al., 2024; Valesan et al., 2024; Prado et al., 2023; Corrêa et al., 2022).

Despite social isolation being the best alternative to protect against the virus worldwide (Hwang et al., 2020), studies stated that it exposed individuals to personal and social vulnerabilities due to blurred boundaries between work and life, which often resulted in reduced self-care, digital fatigue, and quality personal and family time (Oliveira, 2020; Eubank et al., 2024; Powell et al., 2024). To mitigate the potential effects of the COVID-19 pandemic on student retention, the university, through its policies and resources, offered financial assistance to students who declared themselves in vulnerable situations. It is worth mentioning that students did not need to prove they were in a vulnerable situation, as self-declaration was considered valid and sufficient to apply for assistance. More information on the financial assistance provided by the University is available in the "Methods" section.

While some studies have reported the impacts of the COVID-19 pandemic on college students in Brazil, including reduced physical and

mental health and negatively impacted academic performance (Valesan et al., 2024; Prado et al., 2023; Corrêa et al., 2022), this research contributes to the field by focusing on a specific group of student population and the effectiveness of the financial assistance provided by the research university on student retention. It aimed to investigate the perception of Brazilian undergraduate students who received university assistance during the COVID-19 pandemic, exploring both the positive and negative aspects of remote learning and assessing whether the assistance received influenced student retention at the university.

2 Methods

2.1 Ethical approval

Prior to the beginning of the research, this study obtained the required ethical approval from the university (no. 60343922.0.0000.5398). Also, participants' consent was obtained for this study.

2.2 Research setting

The research was conducted at a public Brazilian university, located in the interior of the São Paulo State, the richest state in the country. The study took place in 2022, the third year of the global pandemic, when the illness was less severe and less deadly, and indoor face mask mandates were gradually lifted (Powder, 2022; The New York Times, 2022). The university offers 30 undergraduate programs and is considered one of the top universities in the country. Courses are offered during the day and at night to accommodate students' scheduling needs.

Unlike other higher education institutions in Brazil, this university allows students to choose courses they want to take each semester within their selected program. Thus, the students have the freedom to choose courses that they are most interested in within their program, as long as they complete the required number of credits.

2.3 Participants

After receiving approval from the University's Ethics Committee, we invited all students of the university who met the selection criteria of this study to participate in an online survey via email. Participants had to be 18 years of age or older undergraduate students, who received one of the two types of assistance from the university and voluntarily agreed to participate in this research by signing the Free and Informed Consent Form. A total number of 127 undergraduate students at this Brazilian university voluntarily participated in the research.

2.4 Financial assistance provided by the university

The university offered two types of financial assistance: rent assistance which was to cover housing-related costs, and socioeconomic assistance which was to cover expenses of the internet, computers, and other items needed. All students who requested the assistance were eligible to receive it. The only inclusion criterion was to self-declare being in a situation of vulnerability during the

pandemic. The university maintained a database with students' names, institutional emails, and undergraduate programs to track and monitor students' data and the type of assistance provided.

2.5 The instrument for data collection

To collect the data, we developed an online survey (see [Appendix](#) for the survey). The survey consisted of eight questions: five were about the participants' identification and characterization, one was about the assistance received, and two were open-ended questions on the positive and negative aspects of remote learning, respectively. We sent the survey link to all eligible students via their institutional email available in the university database.

2.6 Procedure

We employed the snowball sampling technique to collect data. According to [Kirchherr and Charles \(2018\)](#), the snowball sampling technique is commonly used in qualitative research across various fields, such as medical and social sciences (p. 1). In this technique, members of the target population invite other members of the same population to participate, thereby expanding the sample population ([da Silva et al., 2021](#)). Although we had sent the survey link directly to the students' institutional emails kept on the university database, we adopted the snowball technique, since students may have various e-mails and may not use the institutional email as their primary email address. Participants were encouraged to forward the survey link to their peers who also requested the university's assistance but did not set up the institutional email as their primary emails, so we could collect as many data as possible. By explicitly describing the inclusion criteria and adopting the snowball sampling technique ([Kirchherr and Charles, 2018](#)), we ensured sample diversity, guaranteed data validity and reliability, and minimized biases.

2.7 Data analysis

Answers to the demographic questions were analyzed using descriptive statistics. We reported the participants' demographic information by number and frequency. In addition, responses to the open-ended questions were analyzed through thematic analysis — reading participants' answers to the open-ended questions in the survey, refining codes, and creating categories to capture the essence of the participants' responses and thus amplify their voices ([Saldaña, 2009](#); [Clark and Creswell, 2015](#); [Rak et al., 2021](#)). We identified themes regarding the positive and negative aspects of remote learning during the COVID-19 pandemic as shared by the survey participants.

3 Results

3.1 Participants' profile and sample characterization

A total of 127 undergraduate students, 67 females (52.8%) and 60 males (47.2%), participated in the research. The distribution of

students by area of knowledge, considering their undergraduate program, was as follows: Biological Sciences ($n = 50$, 39.4%), Exact Sciences ($n = 44$, 34.6%), and Human Sciences ($n = 33$, 26.0%). The specific undergraduate programs students were enrolled in were composed of the following: Biological Sciences, including Biology ($n = 29$, 22.8%) and Physical Education ($n = 21$, 16.5%); Exact Sciences, including Computer Science ($n = 4$, 3.1%), Physics ($n = 14$, 11.0%), Mathematics ($n = 6$, 4.7%), Meteorology ($n = 9$, 7.1%), Chemistry ($n = 9$, 7.1%), and Information Systems ($n = 2$, 1.6%); and Human Sciences, including Psychology ($n = 26$, 20.5%) and Pedagogy ($n = 7$, 5.5%). Regarding the year of admission, 98 participants were admitted in 2020 (77.2%) and 29 in 2021 (22.8%).

During the Pandemic, the enrollment status of participants varied: 11.8% of the participants were not enrolled in any courses ($n = 15$), 0.8% in one course ($n = 1$), 0.8% in two courses ($n = 1$), 3.1% in three ($n = 4$), 7.1% in four ($n = 9$), 11.8% in five ($n = 15$), 24.4% in six ($n = 31$), 11.8% in seven ($n = 15$), 12.6% in eight ($n = 16$), 10.2% in nine ($n = 13$), and 5.5% in ten courses ($n = 7$). Among the participants, 29.9% did not complete all courses they were enrolled in ($n = 38$), while 70.1% completed all courses ($n = 89$). Moreover, 38.3% of the participants reported that they received rent assistance ($n = 48$) and 61.7% received socioeconomic assistance ($n = 79$).

3.2 Positive and negative aspects of remote learning

In the survey, students were invited to express their perceptions of both positive and negative aspects of remote learning. The participants reported the positive aspects of the university-provided assistance. Among the participants, 25 appreciated being with family (19.7%) and made comments such as "I can study while being with my family." Sixteen ($n = 16$) participants found more time and resources to do the activities (12.6%) and commented on the "greater availability of time and resources to do the curricular activities." Twenty-one participants ($n = 21$) enjoyed the opportunities to review the lessons (16.5%). For example, one student stated, "I was able to review the video lessons whenever I needed to." Twenty-one participants ($n = 21$) reported having schedule flexibility (16.5%) and indicated that "you can attend classes at your preferred time." Twenty-two students ($n = 22$) liked the decreased college expenses (e.g., food, transportation, materials, and so on) (17.3%), such as "no transportation expenses and being able to attend asynchronous classes" was a positive part of the remote learning. In addition, 22 participating students reported that they gained greater attention from teachers (17.3%). The results indicated that these positive aspects were seen as motivational factors that positively influenced students' development despite the insecurity the students experienced during the pandemic. [Table 1](#) presents the participants' answers regarding the positive aspects they perceived, sorted by theme, along with the number and frequency of their responses by theme.

On the contrary, the participants reported the negative aspects, including lack of internet access (e.g., "The quality of the internet for both the student and the teacher created problems to watch live classes."), excessive activities (e.g., "Teachers give a lot of homework and activities and end up overloading students."), concerns about the quality of teaching (e.g., "Not all teachers have a good didactic to teach remote classes."), inadequate environment to study (e.g., "Lack of

TABLE 1 Positive aspects of remote learning by theme.

Topic	Number and frequency of answers	Example of answer
Be with the family	25 (19.7%)	I can study while being with my family.
More time and resources to do the activities	16 (12.6%)	Greater availability of time and resources to do the curricular activities
Review the lessons	21 (16.5%)	Being able to review the video lessons whenever I need to
Schedule flexibility	21 (16.5%)	You can attend classes at your preferred time.
Decrease in college expenses (food, transportation, materials, etc.)	22 (17.3%)	No transportation expenses and being able to attend asynchronous classes
Greater attention from the teacher	22 (17.3%)	Teacher attention

TABLE 2 Negative aspects of remote learning by theme.

Topic	Number and frequency of answers	Example of answer
Internet	35 (27.6%)	The quality of the internet for both the student and the teacher, creating problems in watching live classes
Excess of activities	18 (14.2%)	Teachers give a lot of homework and activities and end up overloading students.
Teaching quality	24 (18.9%)	Not all teachers have a good didactic to teach remote classes.
Adequate environment to study	15 (11.8%)	Lack of attention for being at home and being interrupted all the time.
Family problems	12 (9.4%)	Family Problems
Lack of material conditions	23 (18.1%)	The lack of technological resources (cell phone, computer, internet, etc.) can limit participation in the classes

attention for being at home and being interrupted all the time.”), family-related issues, as well as lack of materials and technology tools (e.g., “The lack of technological resources [cell phone, computer, internet, etc.] can limit the participation in the classes”). Table 2 presents the participants’ answers regarding the negative aspects they perceived, sorted by theme, along with the number and frequency of their responses by theme.

4 Discussion

This study aimed to investigate the perceptions of Brazilian undergraduate students who received university assistance during the COVID-19 pandemic, focusing on the positive and negative aspects of remote learning. It also assessed whether the assistance provided by the university impacted student retention. A total of 127 students in vulnerable situations, who applied for and received rent or socioeconomic assistance from the university, participated in our study. Our findings are consistent with global research on the benefits and challenges of remote learning during the pandemic, as well as the importance of the university’s assistance to the students.

4.1 Positive aspects

The findings of this research highlight several positive aspects of remote learning. Being close to family, spending less money on campus, having flexibility in their schedules, and accessing lessons and course materials outside of the scheduled class time were all perceived as positive aspects by students. These benefits are aligned with

previous studies, which reported advantages such as time, location, and digital flexibility, as well as the accessibility of asynchronous lessons and materials anytime and everywhere (Albuquerque et al., 2022; Gonçalves et al., 2020; Powell et al., 2024).

From the perspective of the information processing theory, these positive aspects can be viewed as enhancements to motivational processes, which are integral to executive cognition (Çeliköz et al., 2019). By reducing external stressors and providing a more flexible and accessible learning environment, these enhancements empower students to process and retain information more effectively.

4.2 Negative aspects

Participants in our study reported several negative aspects, including lack of internet access, excessive activities, concerns about teaching quality, inadequate study environment, family-related issues, and insufficient materials and technology tools. These challenges are consistent with those identified by students, teachers, and educational institutions worldwide during the transition from face-to-face to remote learning due to the pandemic, and reported widely by studies from Brazil, China, Pakistan, Portugal, the Philippines, the United Kingdom, and the United States (Valesan et al., 2024; Albuquerque et al., 2022; Evans et al., 2020; Chen et al., 2020; Siddiquei and Kathpal, 2021; Barrot et al., 2021; Sahito et al., 2022; Powell et al., 2024).

The pandemic uniquely exacerbated these issues. For instance, homes became places serving multiple functions, leading to increased conflicts and difficulties in organizing and separating spaces for work, study, and leisure, as reported by our participants and other studies

(Oliveira, 2020). The blurred lines between home and work or study made it challenging to find time for leisure activities (Eubank et al., 2024). According to the information processing theory, these negative aspects can lead to increased stress and decreased motivation, which act as barriers and hinder the effective processing and retention of information (Çeliköz et al., 2019).

4.3 Impact of the university assistance on student retention

The COVID-19 pandemic had a profound negative impact on the global economy, and the country of Brazil and its people were no exception. According to the [Brazilian Institute of Geography and Statistics \(IBGE\) \(2021\)](#), with the advent of the pandemic, for the first time since 2012, less than half of the Brazilian working-age population was employed (49.4%). Meanwhile, a survey conducted by the [Brazilian Federal Senate \(2020\)](#) revealed that 68% of Brazilians experienced decreased family income due to the coronavirus pandemic, which dramatically deepened social inequality in the country. Furthermore, [Ribeiro-Silva et al. \(2022\)](#) pointed out that, food insecurity, nutritional risks, and hunger among Brazilians, which had been present since 2016, worsened in the country due to the pandemic.

Typically, economic recessions lead to increased college enrollment ([United States Census Bureau, 2018](#)). However, maintaining or increasing retention rates can become challenging due to financial concerns ([Adnan and Anwar, 2020](#); [Lassoued et al., 2020](#)). In Brazil, because of limited access to public universities, students have to take competitive admission exams and only those who are qualified can be admitted. This competitive nature of public university admission makes student retention even more critical ([Pena et al., 2020](#); [Fior and Martins, 2020](#)).

Adjusting to college life presents numerous challenges for students, such as living with other students, managing academic demands and tasks, and developing independence, and the latter is one of the key indicators of student growth at university ([Worsley et al., 2021](#)). Our study underscores that independence is directly linked to economic status, which is essential to the students' continuation of their studies at the university. Many students have to work or rely on family support to cover expenses, such as rent, food, transportation, and so on. Thus, besides other concerns regarding college life, maintaining financial stability remains one of the primary concerns for college students in Brazil.

The unique context of the pandemic highlighted the crucial role of institutional support in mitigating these challenges and supporting student retention. The pandemic in Brazil paralyzed almost all sectors of the country and the restrictive isolation measures imposed by the Brazilian government limited mobility, causing many students to lose their jobs or experience decreased family income from themselves or their family members. This situation heightened concerns about students' basic needs and ability to continue their education, exposing them to social vulnerability and undermining their independence.

To alleviate the pandemic's negative impact, the university offered financial assistance, including rent and socioeconomic assistance, to students who self-declared their needs and requested assistance. The results of our study indicated that the university's assistance to the students proved to be beneficial, positively impacting student

development and retention. Notably, 89 participating students (70.08%) completed all their courses without experiencing any personal, social, or educational setbacks resulting from the pandemic.

Viewed through the lens of information processing theory, the financial assistance provided by the university likely contributed to reducing stress caused by COVID-19, enhancing students' well-being, and allowing them to focus more effectively on their academic tasks ([Çeliköz et al., 2019](#)). This, in turn, improved retention and course completion rates, and fostered students' overall quality of life. These findings align with the study done by [Worsley et al. \(2021\)](#), which linked student retention directly to their well-being and reduced psychological distress.

4.4 Limitations

Despite its contributions to better understanding the impact of remote learning on Brazilian undergraduate students who received university assistance during the COVID-19 pandemic and the effectiveness of the university's financial assistance on student retention, this study has several limitations. One limitation of the study is the sample size, which was limited to students who voluntarily participated in the research and signed the Free and Informed Consent Form. In addition, the findings are specific to the context of one Brazilian university, which may not be generalizable to other institutions or countries, as each institution has its own policies and strategies for student retention.

We also recognize the timing of data collection as another limitation of this study. The empirical data were gathered in 2022, the third year of the global pandemic, when the illness had become less severe and less deadly, and indoor face mask mandates were gradually lifted ([Powder, 2022](#); [The New York Times, 2022](#)). People's perspectives and experiences may vary at different stages of the pandemic, from the initial phase when they faced unexpected difficulties and sudden changes, to later stages when they had become more accustomed to the challenges. For example, [Bonaccolto-Töpfer and Castagnetti \(2024\)](#) reported that the first wave of the COVID-19 pandemic did not negatively impact students' academic performance in the short term, while other studies showed that the pandemic presented technological difficulties, physical and psychological challenges, social isolation, and digital fatigue, and resulted in decreased academic performance and reduced physical and mental wellbeing ([Haanes et al., 2024](#); [Eubank et al., 2024](#); [Powell et al., 2024](#); [Valesan et al., 2024](#); [Prado et al., 2023](#); [Corrêa et al., 2022](#)).

4.5 Recommendations for future research

While our results reflect the Brazilian reality during the pandemic, the increasing demand for remote learning in the post-pandemic era suggests that higher education institutions should consider both the positive and negative aspects of remote learning as perceived by students. Addressing these aspects can improve students' educational experience, particularly in online classes, and support their continued development and retention. Future studies should examine how different strategies employed by institutions in online teaching influence student learning outcomes, which could contribute to a broader understanding of effective support mechanisms in higher education.

Moreover, future research should explore various initiatives aimed at enhancing student retention and their impacts on students' lives in a more systematic and longitudinal manner. Investigating the long-term effects of university financial assistance on student well-being and academic success could provide valuable insights for higher education institutions. Such insights would enable institutions to better support student growth, thereby contributing to their own sustainable development.

5 Conclusion

In conclusion, the positive aspects identified in this study, such as being close to family, spending less money on campus, having flexible schedules, and the ability to review lessons and materials, were perceived as factors that contributed to reducing the stress caused by COVID-19, increasing course completion rate and student retention, and improving students' quality of life. However, the negative aspects, including lack of internet access, an overload of activities, concerns about teaching quality, inadequate study environments, family-related issues, and insufficient materials and technology tools, must be considered and addressed by the institution to improve the educational experience of online classes and support student development and retention. The financial assistance provided by the university made positive impacts on student retention and continued development, as the vast majority of the participants reported that the assistance they received helped mitigate the negative impacts of the COVID-19 pandemic at personal, social, and educational levels.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by São Paulo State University Ethics Committee. The studies were conducted in

accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

VC: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. JZ: Data curation, Formal analysis, Investigation, Methodology, Resources, Visualization, Writing – original draft, Writing – review & editing. LG: Data curation, Formal analysis, Investigation, Methodology, Resources, Writing – original draft, Writing – review & editing. MH: Data curation, Formal analysis, Methodology, Resources, Visualization, Writing – original draft, Writing – review & editing. ER: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Validation, Writing – original draft, Writing – review & editing.

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Conflict of interest

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Appendix

Online survey

Name: _____

Gender: M F other: _____

Institutional email: _____

Telephone number: _____

Questions

- 1) Please, indicate your year of admission at the university: 2020 2021
- 2) Please, indicate your undergraduate program: _____
- 3) Please, indicate the area of knowledge of your undergraduate program: _____
- 4) Please, indicate how many courses you were enrolled in during the COVID-19 pandemic: _____
- 5) During the pandemic, did you conclude all the courses you were enrolled in:
- 6) Yes No
- 7) Please, indicate the type of socioeconomic assistance received:
- 8) Rent assistance Socioeconomic assistance
- 9) Considering your opinion, indicate/describe the positive aspects of remote learning during the Covid-19 pandemic: _____

- 10) Considering your opinion, indicate/describe the negative aspects of remote learning during the Covid-19 pandemic: _____

