

INFLUENCE OF THE COVID-19 PANDEMIC ON THE EDUCATION AND ACADEMIC PERFORMANCE OF UNIVERSITY STUDENTS

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Highlights: (1) The COVID-19 pandemic impacted the educational process of Brazilian undergraduates. (2) Younger students and those from the north region were more likely to be impacted. (3) Special attention should be directed to public university students.

PRE-PROOF

(as accepted)

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ABSTRACT

Purpose: Investigate the impact of the Covid-19 pandemic on the higher education through the perception of Brazilian undergraduates. **Methods:** A cross-sectional study was conducted with 1006 students of public and private universities. Data collection happened between September-December 2020 with an online questionnaire addressing socioeconomic characteristics, use of anxiolytics/antidepressants and issues related to the course. Data were analyzed using Poisson regression ($\alpha = 5\%$). **Results:** Most students (68.7%) perceived an impact on their education and reported a high satisfaction with the course (62.2%). Age (OR = 0.98, 95% CI: 0.96 – 0.99), residing in the northern region of the country (OR= 1.26, 95% CI: 1.06 – 1.50), enrollment at a public university (OR= 1.28, 95% CI: 1.17 – 1.40) and lower satisfaction with the course (OR= 1.13, 95% CI: 1.04 – 1.23) were associated with the perception of impact. Regarding self-rated performance in the courses, 41.7% students reported a very low/low performance. A family income of up to two times the monthly minimum wage (OR= 0.68, 95% CI: 0.48 – 0.97), residing in the northeastern region of the country (OR= 0.68, 95% CI: 0.48 – 0.97) and lower satisfaction with the course (OR= 0.36, 95% CI: 0.23 – 0.53) were associated with this outcome. **Conclusions:** The pandemic negatively affected two thirds of undergraduates, especially the younger, from the northern region, public universities and those less satisfied with the course. Nearly forty percent of students rated their academic performance during the pandemic as very low/low, especially those with a low family income, from the northeastern region and those less satisfied with the course.

Keywords: Academic Performance. Coronavirus. Students. Pandemics.

INFLUÊNCIA DA PANDEMIA DA COVID-19 NA EDUCAÇÃO E PERFORMANCE ACADÊMICA DE ESTUDANTES UNIVERSITÁRIOS

RESUMO

Objetivo: Investigar o impacto da pandemia da Covid-19 no ensino superior por relatos de graduandos brasileiros. **Métodos:** Realizou-se um estudo transversal com 1.006 estudantes de universidades públicas e privadas. A coleta de dados ocorreu entre setembro a dezembro de 2020 com um questionário online sobre características socioeconômicas, uso de

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ansiolíticos/antidepressivos e questões relacionadas ao curso. Os dados foram analisados por regressão de Poisson ($\alpha = 5\%$). **Resultados:** A maioria dos alunos (68,7%) percebeu um impacto em sua educação e relatou alta satisfação com o curso (62,2%). Idade (OR = 0,98, IC95%: 0,96 – 0,99), residir na região norte do país (OR= 1,26, IC95%: 1,06 – 1,50), matricular-se em universidade pública (OR= 1,28, IC95%: 1,17 – 1,40) e menor satisfação com o curso (OR= 1,13, IC 95%: 1,04 – 1,23) estiveram associados à percepção de impacto. Quanto à autoavaliação do desempenho, 41,7% dos alunos relataram desempenho muito baixo/baixo. Renda familiar de até dois salários mínimos mensais (OR= 0,68, IC 95%: 0,48 – 0,97), residir na região Nordeste do país (OR= 0,68, IC 95%: 0,48 – 0,97) e menor grau de satisfação com o curso (OR= 0,36, IC 95%: 0,23 – 0,53) foram associados a esse desfecho. **Conclusões:** A pandemia afetou negativamente dois terços dos graduandos, principalmente os mais jovens, moradores da região norte, alunos de universidades públicas e os menos satisfeitos com o curso. Cerca de quarenta por cento dos alunos avaliou seu desempenho acadêmico durante a pandemia como muito baixo/baixo, principalmente os de baixa renda familiar, moradores da região nordeste e os menos satisfeitos com o curso.

Palavras-chave: Desempenho acadêmico. Coronavírus. Estudantes. Pandemias.

1 | INTRODUCTION

Like all pandemics, Covid-19 exerted considerable social, economic and political impacts, as health measures, such as social distancing, needed to be taken to contain the spread of SARS-CoV-2¹. The diverse social changes included the suspension of in-person activities at educational institutions as a strategy to control the dissemination of the virus. This measure affected approximately 90% of students throughout the world and had academic, social and psychological implications².

The Ministry of Education and Ministry of Science & Technology, Higher Education and Professional Technical Education in Brazil advised higher education institutions to create a class recovery plan and monitor the execution of the plan³. Despite the limitations and challenges, such as the need for access to the internet, the challenge of the new way of teaching and emotional difficulties, the shift to remote teaching proved important to maintaining the bond between students and professors as well as expanding the methods of the teaching-learning process⁴⁻⁵.

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Studies report a higher frequency of mental disorders, such as anxiety and depression, as well as psychological suffering among university students when compared to the general population⁶⁻⁸. Therefore, university students are presumed to have suffered impacts with regards to the educational experience and harmful effects on mental health caused by the Covid-19 pandemic due to the economic stressors, effects on daily living and academic delays⁹. Indeed, an investigation conducted with university students from Uganda during the Covid-19 pandemic found that more than half of participants were dissatisfied with their academic performance. Dissatisfaction with academic performance was a predictor of depression and suicidal ideation in this sample.⁴ Moreover, in an investigation including 1452 Brazilian undergraduate students from two states, 82.3% reported that the pandemic negatively influenced their general abilities to study and maintain academic commitment.¹⁰ The few studies available on the topic show that a significant amount of university students struggled to keep engaged in university activities during the pandemic. Thus, there is a need to investigate the influence of the changes faced during the pandemic on the academic performance of university students¹¹.

Academic performance is considered an important aspect to measure, as it enables identifying and guiding vulnerable students at risk of dropping out of the course or who require additional attention. Although some Brazilian universities have investigated the impacts of the pandemic on students, there is a need for studies with the participation of diverse universities and teaching institutions from all regions of the country¹². Therefore, the aim of the present study was to investigate the impact of the pandemic on the educational experience of Brazilian university students based on their self-rated performance in courses during the pandemic.

2 | METHODS

2.1 | Ethical aspects

This study received approval from the Human Research Ethics Committee of *Centro Universitário UNIFACISA* (certificate number: 37033420.6.0000.5175). Each participant was given a code to ensure confidentiality and anonymity. All volunteers had autonomy regarding participation or non-participation in the study and the participants only completed the online questionnaire after accepting the term of informed consent. All procedures were in accordance with the ethical precepts stipulated in Resolution N° 466/2012 of the Brazilian National Board

of Health as well as Resolution nº 510/16, which addresses projects involving electronic forms¹³.

2.2 | Study design, setting and sample

An online, analytical, cross-sectional study was conducted with male and female university students 18 years of age or older enrolled at public and private universities in Brazil. According to the most recent Higher Education Census, there were approximately 8.5 million students enrolled at 2,537 higher education institutions in Brazil in the year 2018 (BRASIL, 2019).

Non-probabilistic convenience sampling was performed. The sample size was calculated using the *G*Power* software program for the estimate of proportions considering a 95% significance level and 90% power¹⁴. A pilot study was conducted with 50 students in the northeastern region of Brazil to test the methods and obtain information for the sample size calculation. Based on this pilot study, the proportion of students with higher and lower satisfaction with the course and who experienced an impact on the educational process was 75% and 65%, respectively. The data related to this variable provided the largest sample to investigate associations in this study. The minimum sample was calculated to be 436 students. This figure was increased by 30% to compensate for possible losses, resulting in a desired sample of 623 students. The final sample was composed of 1006 students.

2.3 | Eligibility criteria

The inclusion criteria were university students 18 years of age or older enrolled in undergraduate courses at public or private higher education institutions in Brazil. Individuals not enrolled at higher education institutions and those with vision impairment were excluded from the study.

2.4 | Data collection

Data collection was performed virtually with the aid of an online questionnaire created using the SurveyMonkey® platform. Contact was first made by e-mail with the coordinating body of the universities of the country following searches on institutional websites and contact with collaborating researchers from other institutions. The e-mail contained a letter detailing the objectives and methods of the study and the access link to the electronic questionnaire to be

sent to the students. The link was also divulged through the social media (Instagram®, Facebook® and WhatsApp®) of the researchers involved in the study.

2.5 | Data collection instruments

The following instruments were used for data collection: *Sociodemographic questionnaire* addressing sex, age, marital status, monthly family income and geographic region of the country in which the student resides. *Questionnaire on aspects related to the course and perception of impact of Covid-19* addressing type of teaching institution, impact on educational experience, self-rated academic performance during the pandemic, satisfaction with the course, psychological/psychiatric accompaniment and use of anxiolytics/antidepressants. The questions from both instruments were combined in a single questionnaire to facilitate the data collection process and dissemination of the study.

2.6 | Data processing and analysis

Descriptive statistics were performed. Absolute and relative frequencies were calculated for qualitative variables, whereas mean, standard deviation, median and interquartile range were determined for continuous variables. The statistical analysis was performed with the aid of the Statistical Package for the Social Sciences, version 25 (SPSS for Windows 25.0, SPSS Inc, Chicago, IL, USA). The data were analyzed using the chi-square test and Poisson regression with robust variance ($\alpha = 5\%$).

3 | RESULTS

The final sample was composed of 1006 university students. Mean age was 23.2 years and the students had completed a mean of 5.6 semesters of the undergraduate program. Most students were women, unmarried and had a family income higher than two times the minimum monthly wage. More than 65% resided in the northeastern region of Brazil, 18.3% resided in the southeastern region, 7.7% in the central western region, 5.1% in the northern region and 3.3% in the southern region. Approximately 52% were enrolled at public institutions (Table 1).

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Table 1. Characterization of sample (N = 1006).

Variable	N	Frequency	
			%
Sex			
Female	750		75.0
Male	250		25.0
Marital status			
Unmarried	887		88.4
Married	116		11.6
Family income			
Up to 2 x monthly min. wage	360		36.3
More than 2 x monthly min. wage	632		63.7
Geographical region			
North	51		5.1
Northeast	658		65.7
Central West	77		7.7
South	33		3.3
Southeast	183		18.3
Type of institution			
Public	447		47.6
Private	526		52.4
Impact on educational process			
Yes	691		68.7
No	315		31.3
Academic performance during pandemic			
Very low/low	420		41.7
Very high/high/average	548		58.2
Satisfaction with course			
Very low/low/fair	379		37.8
High/very high	624		62.2
Psychological/psychiatric accompaniment			
Yes	402		40.6
No	587		59.4

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Use of anxiolytic/antidepressant		
Yes	155	15.7
No	832	84.3
	Mean (SD)	Median (Q1-Q3)
Semester	5.6 (2.9)	6.0 (3-8)
Age	23.2 (4.9)	22 (20-24)

SD: standard deviation. Q1: first quartile. Q3: third quartile.

Regarding the impact of the Covid-19 pandemic on the educational experience, more than two-thirds of the students (68.7%) reported having suffered an impact; 41.7% stated having a very low/low performance during the pandemic; 62.2% reported high/very high satisfaction with the course; and 84.3% reported not using anxiolytics/antidepressants (Table 1).

Table 2 displays the association between perception of impact on educational process and academic performance in undergraduate studies during the pandemic. There was a statistically significant association between a lower performance in undergraduate studies and the perception of impact of the pandemics on the educational process ($p < 0.001$). The adjusted Poisson regression analysis revealed that age (OR = 0.98, 95%CI: 0.96 – 0.99), residing in the northern region of the country (OR = 1.26, 95%CI: 1.06 – 1.50), studying at a public teaching institution (OR = 1.28, 95%CI: 1.17 – 1.40) and reporting very low/low/fair satisfaction with the course (OR = 1.13, 95%CI: 1.04 – 1.23) remained significantly associated with the impact of the pandemic on the educational experience (Table 3).

Table 2. Association between perception of impact on educational process and academic performance in undergraduate studies among university students during the pandemic.

	Academic performance in undergraduate studies		
	Low n (%)	High n (%)	p- value*
Impact on educational process			
Yes	352(50.9)	339(49.1)	<0.001
No	68(21.6)	247(78.4)	

*Chi-square test significant at the 5% level.

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Table 3. Unadjusted and adjusted Poisson regression of independent variables associated with impact on educational process among university students.

Variables	Impact on educational process		p-value*	Unadjusted PR (95% CI)	p-value**	Adjusted PR (95% CI)
	Yes	No				
	n (%) Mean (SD)	n (%) Mean (SD)				
Sex						
Female	532 (70.9)	218 (29.1)	0.024	1.13 (1.01-1.25)	-	-
Male	157 (62.8)	93 (37.2)		1.00		-
Marital status						
Unmarried	620 (69.9)	267 (30.1)	0.06	1.16 (0.99-1.35)	-	-
Married	70 (60.3)	46 (39.7)		1.00		-
Family income						
Up to 2 x monthly min. wage	251 (69.7)	109 (30.3)	0.653	1.02 (0.93-1.11)	-	-
More than 2 x monthly min. wage	432 (68.4)	200 (31.6)		1.00		-
Age	22.7 (4.3)	24.0 (5.8)	0.001	0.98 (0.97-0.99)	0.004	0.98 (0.96-0.99)
Geographical region						
North	42 (82.4)	9 (17.6)	0.035	1.18 (1.01-1.40)	0.009	1.26 (1.06-1.50)
Northeast	450 (68.4)	208 (31.6)	0.793	0.98 (0.81-1.10)	0.69	1.02 (0.91-1.15)
Central West	44 (57.1)	33 (42.9)	0.078	0.82 (0.66-1.02)	0.80	1.02 (0.83-1.26)
South	26 (78.8)	7 (21.2)	0.217	1.13 (0.92-1.39)	0.21	1.13 (0.93-1.37)
Southeast	127 (69.4)	56 (30.6)		1.00		1.00
Type of institution						
Public	368 (77.1)	109 (22.9)	<0.001	1.26 (1.16-1.37)	<0.001	1.28 (1.17-1.40)
Private	321 (61.0)	205 (39.0)		1.00		1.00
Satisfaction with course						
Lower	286 (75.5)	93 (24.5)	<0.001	1.16 (1.07-1.26)	0.004	1.13 (1.04-1.23)
Higher	403 (64.6)	221 (35.4)		1.00		1.00
Psychological/psychiatric accompaniment						
Yes	285 (71.0)	117 (30.0)	0.225	1.00	-	-

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No	395 (67.3)	192 (32.7)		0.95 (0.87-1.03)	-	-
Use of anxiolytic/antidepressant						
Yes	570 (68.5)	262 (31.5)	0.427	1.00	-	-
No	111 (71.6)	44 (28.4)		0.95 (0.86-1.07)	-	-
Semester	5.6 (2.8)	5.5 (3.0)	0.530	1.00 (0.99-1.02)	-	-

* Unadjusted Poisson regression

** Variables incorporated into adjusted model ($p < 0.20$): sex, age, marital status, geographic region, type of teaching institution, semester and satisfaction with course.

Regarding self-rated performance in the undergraduate courses, a family income of up to two times the monthly minimum wage (OR = 0.68, 95% CI: 0.48 – 0.97), residing in the northeastern region of the country (OR = 0.68, 95% CI: 0.48 – 0.97) and less satisfaction with the course (OR = 0.36, 95% CI: 0.23 – 0.53) were significantly associated with this outcome in the final model (Table 4).

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Table 4. Unadjusted and adjusted Poisson regression of independent variables associated with self-rated academic performance among university students

Variable	Academic performance in undergraduate studies					
	Low	High	p- value*	Unadjusted PR	p- value**	Adjusted PR
	n (%)	n (%)		(95% CI)		(95% CI)
	Mean (SD)	Mean (SD)				
Sex						
Female	643 (85.7)	107 (14.3)	0.408	0.87 (0.62-1.21)	-	-
Male	209 (83.6)	41 (16.4)		1.00		-
Marital status						
Unmarried	757 (85.3)	130 (14.7)	0.805	0.94 (0.60-1.48)	-	-
Married	98 (84.5)	18 (15.5)		1.00		-
Family income						
Up to 2 x monthly min. wage	323 (89.7)	37 (10.3)	0.003	0.60 (0.41-0.83)	0.035	0.68 (0.48-0.97)
More than 2 x monthly min. wage	522 (82.6)	110 (17.4)		1.00		1.00
Age	23.1 (4.8)	23.6 (5.4)	0.268	1.01 (0.98-1.04)	-	-
Geographical region						
North	47 (92.2)	4 (7.8)	0.046	0.37 (0.13-0.98)	0.196	0.513 (0.18-1.41)
Northeast	572 (87.0)	86 (13.0)	0.005	0.61 (0.43-0.86)	0.034	0.68 (0.48-0.97)
Central West	65 (84.4)	12 (15.6)	0.298	0.73 (0.40-1.32)	0.536	0.83 (0.47-1.48)
South	26 (78.8)	7 (21.2)	0.990	0.99 (0.48-2.03)	0.812	0.91 (0.46-1.83)
Southeast	144 (78.7)	39 (21.3)		1.00		1.00
Type of institution						
Public	402 (84.3)	75 (15.7)	0.411	1.13 (0.84-1.52)	-	-
Private	453 (86.0)	73 (14.0)		1.00		-
Satisfaction with course						
Lower	352 (93.0)	27 (7.0)	<0.001	0.36 (0.24-0.54)	<0.001	0.36 (0.23-0.53)
Higher	503 (80.6)	121 (19.4)		1.00		1.00

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Psychological/psychiatric accompaniment						
Yes	334 (83.0)	68 (17.0)	0.133	1.00	-	-
No	508 (86.5)	79 (13.5)		0.80 (0.60-1.07)	-	-
Use of anxiolytic/antidepressant						
Yes	137 (88.4)	18 (11.6)	0.233	0.75 (0.47-1.20)	-	-
No	704 (84.6)	128 (15.4)		1.00	-	-
Semester	5.6 (2.8)	5.5 (2.8)	0.958	1.01 (0.95-1.05)	-	-

* Unadjusted Poisson regression

** Variables incorporated into adjusted model ($p < 0.20$): family income, geographic region, satisfaction with course and psychological/psychiatric accompaniment.

4 | DISCUSSION

In the present study, female university students, residents in the northern region of the country, students enrolled at public teaching institutions and those less satisfied with the course reported a negative impact of the Covid-19 pandemic on their educational experience. Few studies have evaluated the impact of the pandemic on the academic life of university students. To the best of our knowledge, this is the first representative study on the subject in Brazil.

Approximately two-thirds of the students reported that the Covid-19 pandemic exerted an impact on their educational experience. This percentage is higher than that reported in a study conducted by the Associação Brasileira de Mantenedoras de Ensino Superior, which found that only 30% of students reported a significant impact of the pandemic on their routine¹⁵. However, data from the United Nations Educational, Scientific and Cultural Organization (UNESCO) revealed that 72% of the student population of the world was negatively affected by the closing of teaching institutions during the pandemic, which is similar to the proportion found in the present investigation¹⁶. The high impact may be explained by the numerous adversities university students faced during the pandemic, such as difficulties on personal and emotional levels, professors with a lack of training for remote teaching, the delay of some institutions in adapting to the online system as well as problems with the availability and functioning of equipment and access to the internet¹⁷.

Age was also significantly associated with impact in the educational process. In a study conducted with more than 1400 university students of different ages in the Brazilian states of Ceará and São Paulo, more than half of the participants reported that the Covid-19 pandemic generated anxiety regarding the possibility of not completing the school year in the time

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originally expected, thereby delaying graduation. The study also demonstrated that university students 35 years of age or older accompanied the online activities better than younger students whether due to emotional maturity or greater responsibility with life¹⁰. This may explain the finding of the present study, in which younger students reported a more negative impact on their undergraduate studies during the Covid-19 pandemic in Brazil.

Students residing in the northern region of the country reported a greater impact on their educational experience during the pandemic compared to those residing in other regions of Brazil. A previous study characterized the conditions of higher education students during the pandemic and found that the northern and northeastern regions of the country had a lower percentage of homes with access to the internet and that 20.9% of homes in the northern region had five or more residents.¹⁸ Such factors can hinder the learning process in the context of remote teaching, causing an impact on the educational experience, as access to the internet and electronic devices and having an adequate home environment became essential during the pandemic¹⁹.

Most institutions adopted online technologies as a way to ensure the continuity of the education in terms of teaching, research and extension courses, however, there was a delay in the offer of online classes at most public universities in Brazil compared to private universities, which may have been due to the difficulties imposed by the profile of the students, many of whom are from low-income families and some are digitally excluded²⁰. This may explain the greater impact of the pandemic reported by students enrolled at public universities in comparison to private universities in the present study.

Students who stated having a lower degree of satisfaction with the course were more likely to report an impact on the educational experience due to the pandemic. This finding is compatible with data from a previous study, in which 51.5% of Ugandan university students were dissatisfied with their academic performance in the context of remote teaching⁴. We also observed an association between a lower performance in undergraduate studies and the perception of impact of the pandemics on the educational process. These findings highlight the need to monitor students within this profile, as student satisfaction and academic performance are linked to dropping out^{21,22} and changing the choice of profession, with a possible negative impact on one's professional career and satisfaction with life²³.

Nearly half of the students reported having a very low/low academic performance during the pandemic. A study developed at a public higher education institution in Brazil reported

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a similar finding, with 49.5% of the participants reporting an insufficient academic performance²⁴. The dissatisfaction and low academic performance may be related to the skills of students regarding the use of information and communication technologies, the aim of which was to attenuate the impact of the suspension of in-person classes, the lack of personal contact with classmates, the fear of becoming infected and the absence of practical activities, which are often indispensable to the educational experience²⁵.

A low family income of up to two times the monthly minimum wage (approximately \$402) was associated with a self-rated poor performance during the pandemic. An important consequence of the pandemic was unemployment and/or a reduction in, which has repercussions with regards to personal and professional aspects as well as academic performance²⁶. A lower income may also indicate greater difficulty in obtaining access to online classes, which could end up discouraging students or compromising their academic yield²⁷.

Students residing in the northeastern region were more likely to rate their academic performance as poor compared to other regions of the country. The Northeast was the last region to adopt online activities²⁸. Adaptation processes do not always occur in the expected manner and greater difficulty was faced in this process due to the challenges imposed by the Covid-19 pandemic and the transition to remote teaching,²⁴ which may have contributed to the self-rated very low/low academic performance on the part of students residing in the northeastern region.

A lower degree of satisfaction with the course was associated with a self-rated poor academic performance in the present study. This may be explained by the fact that, although remote teaching constituted an option during the pandemic, it left gaps in the educational process²⁹. The impossibility of practical (“hands-on”) classes as well as the lack of face-to-face interactions, quality student discussions and personal attention are examples of the inadequacies of remote teaching³⁰.

The present study has limitations inherent to the cross-sectional design, which does not enable the establishment of cause-and-effect relationships. Thus, further studies, especially those with a longitudinal design, should be conducted to evaluate the impact of the Covid-19 pandemic on the educational process among Brazilian university students. Another limitation of this study was the online data collection. However, evidence shows that the results of data from “paper and pencil” and computerized models are equivalent³¹. The results of this study could assist in designing strategies to improve the teaching-learning process that minimize and

even compensate for the repercussions of the pandemic among university students in the country. For such, it is necessary to understand in the impact of the Covid-19 pandemic on the educational experience of these students as well as factors that affect academic performance so that the educational process can lead to the formation of well-prepared professionals who contribute to the development of the country. It is therefore essential to support continuity in scientific production on this issue.

5 | CONCLUSION

Around two-thirds of the Brazilian students surveyed perceived that the Covid-19 pandemic impacted the quality of their undergraduate studies. Age, residing in the northern region of the country, studying at a public teaching institution and a very low/low/fair level of satisfaction with the course were associated with the occurrence of impact on the educational experience of the students during the pandemic.

Moreover, nearly forty percent of students self-rated their academic performance as very low/low during the suspension of in-person classes, especially those with a family income of less than two times the monthly minimum wage, those residing in the northeastern region of the country and those who reported very low/low/fair satisfaction with the course.

REFERENCES

- ¹World Health Organization. WHO Timeline –COVID-19. 2020.
- ²United Nations Educational S and CO. Adverse consequences of school closures. 2020.
- ³Brasil. Ministério da Educação. Parecer Homologado Parcialmente. Despacho do Ministro. 2020;57.
- ⁴Kaggwa, MM, et al. Prevalence and Factors Associated With Depression and Suicidal Ideation During the COVID-19 Pandemic Among University Students in Uganda: A Cross-Sectional Study. *Frontiers in Psychiatry*. 2022;13.
- ⁵Seymour-Walsh A, Weber A, Bell A. Practical approaches to pedagogically rich online tutorials in health professions education. *Rural Remote Health*. 2020.
- ⁶Lederer AM, Hoban MT, Lipson SK, et al. More than inconvenienced: The unique needs of US college students during the COVID-19 pandemic. *Health Education & Behavior*. 2021;48(1):14-19, 2021.

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⁷Hasan N, Bao Y. Impact of “e-Learning crack-up” perception on psychological distress among college students during COVID-19 pandemic: A mediating role of “fear of academic year loss”. *Children and youth services review*. 2020;118:105355.

⁸Cao W, Fang Z, Hou G, et al. The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Res*. 2020;287:112934.

⁹Hasan N, Bao Y. Impact of “e-Learning crack-up” perception on psychological distress among college students during COVID-19 pandemic: A mediating role of “fear of academic year loss”. *Children and youth services review*. 2020; 118:105355.

¹⁰Osti A, Júnior JAFP, S. Almeida L. O comprometimento acadêmico no contexto da pandemia da covid-19 em estudantes brasileiros do ensino superior. *Rev Práxis*. 2021;3:275–92.

¹¹Kassarnig V, Bjerre-Nielsen A, Mones E, et al. Class attendance, peer similarity, and academic performance in a large field study. *PLoS One*. 2017;12(11):e0187078.

¹²Sörberg W, Alma, et al. Academic performance, externalizing disorders and depression: 26,000 adolescents followed into adulthood. *Social psychiatry and psychiatric epidemiology*. 2019; 54: 977-986.

¹³Brasil. Ministério da Saúde. Conselho Nacional de Saúde. Resolução no466, de 12 de dezembro de 2012. 2012.

¹⁴Brasil. Ministério da Educação. Censo Educacional 2019. 2019.

¹⁵Associação Brasileira de Mantenedoras de Ensino Superior. Na pandemia, 22% das faculdades particulares pausaram atividades e não adotaram o ensino remoto, diz pesquisa. Em: <https://abmes.org.br/noticias/detalhe/3768/na-pandemia22-das-faculdades-particulares-pausaram-atividades-enao-adotaram-o-ensino-remoto-diz-pesquisa>. Acesso: 27 de dezembro de 2021.

¹⁶United Nations Educational S and CO. COVID-19 impact on education. 2020.

¹⁷Torres ACM, Alves LRG, Costa ACN. Education and Health: reflections on the university context in times of COVID-19. *Educ Heal reflections Univ Context times COVID-19*. 2020;1:92.

¹⁸Gusso HL, Archer AB, Luiz FB, et al. Ensino superior em tempos de pandemia: diretrizes à gestão universitária. *Educ Soc*. 2020;41.

¹⁹Ahshan R. A framework of implementing strategies for active student engagement in remote/online teaching and learning during the COVID-19 pandemic. *Education Sciences*. 2021;11(9):483.

²⁰Morgan, H. Alleviating the challenges with remote learning during a pandemic. *Education Sciences*. 2022; 12 (2): 109.

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- ²¹Lorenzo-Quiles O, Galdón-López S, Lendínez-Turón A. Factors contributing to university dropout: a review. *Front Educ.* 2023; 8:1159864. Available from: doi: 10.3389/feduc.2023.1159864.
- ²²Nurmalitasari ZAL, Mohammad FMN. Factors Influencing Dropout Students in Higher Education. *Education Research International*, 2023; (2023): 7704142. Available from: <https://doi.org/10.1155/2023/7704142>.
- ²³Lounsbury JW, Saudargas RA, Gibson LW, Leong FT. An Investigation of Broad and Narrow Personality Traits in Relation to General and Domain-Specific Life Satisfaction of College Students. *Res High Educ.* 2005;46(6):707–29.
- ²⁴Freitas EO, Silva NR, Silva RM, et al. Autoavaliação de estudantes universitários sobre seu desempenho acadêmico durante a pandemia da covid-19. *Rev Gaúcha Enferm.*2022;43.
- ²⁵Morcillo AJR, Costa CL, García JEM, Martínez MR. Experiences-of-nursing-students-during-the-abrupt-change-from-facetoface-to-elearning-education-during-the-first-month-of-confinement-due-to-COVID19-in-SpainInternational-Journal-of-Environmental-Research-and-Publ.pdf. *Int J Environ Res Public Health.* 2020;17(5519):1–15.
- ²⁶Fundação Oswaldo Cruz. Convid: pesquisa de comportamentos. 2020.
- ²⁷United Nations. Policy Brief: Education during COVID-19 and Beyond (August 2020); Technical Report; United Nations: San Francisco, CA, USA, 2020.
- ²⁸Prada T, Costa PM, Nardi MB. Covid-19 e a contribuição da assistência estudantil para a permanência acadêmica. *Cad Cajuína.* 2021;6(3):128.
- ²⁹Costa R, Lino MM, Souza AIJ, et al. NUrning teaching in covid-19 times: how to reinvent it in this context?. *Texto Context - Enferm.* 2020;29.
- ³⁰Khattar A, Jain PR, Quadri SMK. Effects of the disastrous pandemic covid 19 on learning styles, activities and mental health of young indian students-a machine learning approach. In: 2020 4th International Conference on Intelligent Computing and Control Systems (ICICCS). 2020;1:1190–5.
- ³¹Colasante E, Benedetti E, Fortunato L, et al. Paper-and-pencil versus computerized administration mode: comparison of data quality and risk behavior prevalence estimates in the european school survey project on alcohol and other drugs (ESPAD). *PLoS One.* 2019;14(11):e0225140. Available from: <https://dx.plos.org/10.1371/journal.pone.0225140>

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