

# The impact of covid-19 on undergraduate dental students and the perspective of resuming face-to-face activities

O impacto da covid-19 nos alunos de graduação de odontologia e a perspectiva de retorno às atividades presenciais

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## Resumo

**Introdução:** a contaminação em massa pelo novo coronavírus promoveu danos suficientes para que a pandemia se estendesse por tempo indeterminado. **Objetivo:** analisar os fatores emocionais adquiridos por estudantes do curso de odontologia no período pandêmico COVID-19 e as influências relacionadas ao retorno das atividades presenciais. **Material e método:** pesquisa observacional, transversal e analítica, realizada em uma universidade pública do estado do Pará. Foi aplicado na comunidade acadêmica um questionário de pesquisa, próprio, validado pelo comitê de ética da Universidade Federal do Pará, por um período de 3 meses (novembro de 2020 a janeiro de 2021). Para a análise foi pelo programa Excel, estatísticas Kappa e o teste Qui-quadrado exibidos por frequência e porcentagem. **Resultado:** participaram da pesquisa 188 alunos de odontologia. Os resultados obtidos na pesquisa foram de acordo com a hipótese gerada pelos pesquisadores, cerca de 19,2% e 3,7%, apresentaram crises emocionais elevando-as no período de confinamento. Quanto as expectativas para o atendimento, houve aumento de estado opressivo de crises psíquicas (ansiedade, estresse, raiva, medo), consideradas influentes na cognição dos traços comportamentais durante o atendimento pós pandemia. **Conclusão:** o estudo identificou que as alterações emocionais adquiridas no surto pandêmico desencadearam impacto negativo no rendimento estudantil, todavia, a sintomatologia depressiva esteve expressa em acadêmicos concluintes.

**Descritores:** Estudantes de odontologia; esgotamento psicológico; pandemias; ajustamento emocional.

## Abstract

**Introduction:** mass contamination by the new coronavirus caused enough damage for the pandemic to extend indefinitely **Objective:** the objective of this study was to analyze the emotional factors acquired by students from a dentistry course during the COVID-19 pandemic period and the influences related to the resumption of face-to-face activities. **Material and method:** it is an observational, cross-sectional and analytical research conducted at a public university in the state of Pará, Brazil. A research questionnaire, prepared by the authors and validated by the ethics committee of the Federal University of Pará, was applied to the academic community for a period of three months (November 2020 to January 2021). The analysis was performed using the Excel program, Kappa statistics and the Chi-squared test, whose results were presented as frequency and percentage. **Result:** a total of 188 dental students participated in the research. The findings proved to be in accordance with the hypothesis generated by the researchers, about 19.2% had emotional crises and 3.7% increase in the lockdown period. As for the expectations for care services, there was an increase in the oppressive state of psychic crises (anxiety, stress, anger, fear), considered influential in the cognition of behavioral traits during post-pandemic care. **Conclusion:** the study identified that the emotional changes acquired in the pandemic outbreak had a negative impact on student performance; however, depressive symptoms were expressed in graduating students.

**Descriptors:** Students, dental; burnout, psychological; pandemics; emotional adjustment.



## INTRODUCTION

Few times in history there have been crises that can compare to the one we are facing with SARS-Cov-2, which impacts multiple sectors simultaneously<sup>1,2</sup>. This new strain is recognized as typical of a betacoronavirus of the B lineage, with round or oval particles<sup>3</sup>, generally polymorphic and with genetic characteristics significantly different from the records of SARS-Cov 2002 and MERS-Cov 2012<sup>4</sup>.

Mass contamination by the new coronavirus caused enough damage for the pandemic to extend indefinitely<sup>5,6</sup>. In general terms, pandemic comes from the Greek word “pan”, which means all, and “demos”, which means people<sup>3</sup>. It is understood that being an epidemic of large proportions, which overloads health services in several countries and disrupts the infrastructure of services, it changed the pattern of Brazilians' economy and generated unusual demands – for instance, social distancing, as well as the closing of public and private Schools in 2020 and part of 2021<sup>7</sup>.

As a result of changes in daily routines and distancing from people, several disorders were aggravated and/or acquired by individuals not infected by COVID-19, such as: anxiety disorder, excessive stress, aggressiveness, adaptation disorder followed by phobias and depression<sup>8</sup>. Some individuals absorbed emotional illnesses from the environment, with unfavorable signs and symptoms, which, in some cases, happened to be consistent with those of COVID-19, even before one contracting the viral agent<sup>9,10</sup>.

The negative effects resulting from the efforts aimed at containing the proliferation of the coronavirus reached the population in general, especially university students<sup>11</sup>; a lack of concentration arising from the isolation period, while they were away from loved ones, brought students psychosomatic problems, and this somatization was increased due to the interruption of laboratory and clinical classes<sup>11-13</sup>.

Studies show that the socialization of a set of individuals is able to help with cognition. However, desocialization can have a great impact on quality of life, generating a negative behavior<sup>8,11,12</sup>. Hence the need to study the profile of dental students, as well as to document and assess possible psychic repercussions, based on current literature<sup>14</sup>.

The research seeks to reach the largest number of students at the Federal University of Para School of Dentistry, in a safe and accessible manner, through an online questionnaire prepared by its authors. The study will provide subsidies to help the group that is more susceptible to behavioral stress, anxiety disorder and depression, making it possible to monitor and intervene in the influence of learning competition in post-pandemic clinical care.

## MATERIAL AND METHOD

The submitted research was approved by the ethics committee of the Institute of Health Sciences of the Federal University of Pará (ICS-UFPA), under CAEE 35055820.4.0000.0018, and with legal opinion No. 4.161.955.

All participating subjects were previously informed about the purposes of the research and, in agreement, signed the Free and Informed Consent Form (FICF), in two copies, one for the participant, and the other for the researcher. The type of research is observational, cross-sectional and analytical, mediated by a pilot study with 20 students, where positive data collection was obtained from the questionnaire made by the researchers for this study at T0 (before the pandemic), T1 (during the outbreak), T2 (aspects generated).

The collected data were recorded in a spreadsheet in the Microsoft Office Excel 2019 program, with the criteria developed by the authors of the study, then subjected to statistical analysis by the Chi-squared test, using the Jamovi program (version 1.1.9; Oxford, United Kingdom).

Data are displayed by frequency and percentage, and the respective results were considered statistically significant for  $p < 0.05$ .

The population of the present study consisted of 190 students from the dentistry course, all enrolled regularly. Students from all semesters at the UFPA School of Dentistry were accepted. The study excluded those who were absent, who dropped out of the academic period, who were outside the country, and those under 18 years of age.

The study population was composed of all students, that is, 190 of the respondents who had access to the internet accessed the questionnaire link available through digital platforms (WhatsApp, E-mail, Facebook and Instagram). Of these, the study had 2 excluded due to incomplete data, who claimed lack of time to respond to the research instrument.

## RESULT

A total of 188 students from the dentistry course participated in the research (14 from the 1<sup>st</sup> semester; 12 from the 2<sup>nd</sup> semester; 19 from the 3<sup>rd</sup> semester; 17 from the 4<sup>th</sup> semester; 17 from the 5<sup>th</sup> semester; 20 from the 6<sup>th</sup> semester; 13 from the 7<sup>th</sup> semester; 20 from the 8<sup>th</sup> semester; 23 from the 9<sup>th</sup> semester, and 33 from the 10<sup>th</sup> semester); they were enrolled regularly in the undergraduate course of the Federal University of the state of Pará.

The respondents were predominantly female (61.7%); the average age was between 22 and 25 years (45.2%); many were living with their parents and were dependent on them (58.5%). As for academic characteristics, 56 university students were attending the last year of their undergraduate courses, referring to semesters 2020.2 and 2020.4; they were 36 females aged 21 to ≥25 years, and 20 males aged 22 to >26 years.

As for general health information with a proven medical diagnosis before the pandemic, 85.6% of the graduating students did not have systemic diseases for aggravation when being infected by the Sars-Cov-2 virus. According to the questions in the questionnaire, 19.2% and 3.7% of the individuals had anxiety and early depressive symptoms, respectively, which increased in the lockdown period.

Comparing the general scores, only 37.7% of the students were infected; these data include those who went out and had contact with possibly infected people, and those who complied with the distancing somehow showed symptoms of COVID-19, and there was no significant difference regarding mental health ( $p > 0.05$ ).

It is important to note that the study also shows that only 8.6% of the total sample sought face-to-face care, among which 0.5% of the student population required hospitalization due to severe symptoms caused by the viral agent.

Table 1 presents the association between acquired emotional factors and their influence on student performance during the period of social isolation of the analyzed population.

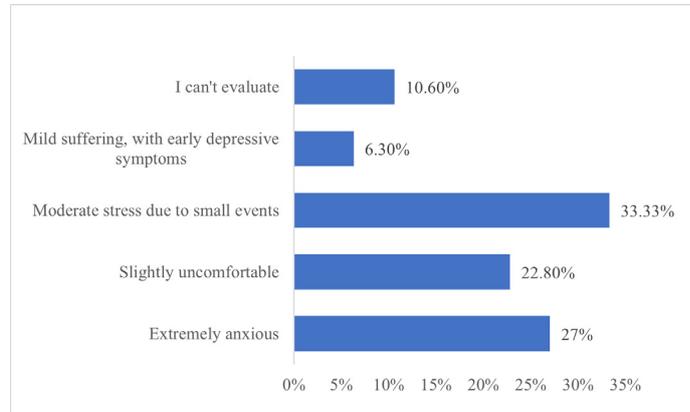
**Table 1.** Correlation of the semester variable and the evolution of adaptation to studies – Belém, PA, 2021

	N	%	X <sup>2</sup>	p-Value
<b>Acceptance of online classes</b>	129	68.6	24.3	0.004#
<b>Student performance</b>				
Insufficient	64	34	48.6	0.079
Regular	65	34.5		
<b>No intention to change course</b>	140	74.4	17.5	0.49#

# $p < 0.05$  – correlation coefficient.

It is possible to observe that there was not good acceptance of online classes by the students, and the learning "Insufficient" and "Regular" are inserted in the student performance and are negative points, despite the difficulties in the pandemic period don't want change course.

Although the course of the disease has shaken many students, Figure 1 shows the behavioral data acquired during the outbreak. A total of 87.2% (n=164) of the students answered that they were following the news and the results of studies carried out on the coronavirus and a possible cure. Another 70.7% (n=133) claimed to have experienced excessive loads of information.



**Figure 1.** Occurrence of student suffering in the dentistry course, acquired in the pandemic period – Belém, PA, 2021.

Despite the acceptance of the online resource (classes, live streams and courses) by dental students being at 68.6%, the newcomers attending the 1<sup>st</sup> and 2<sup>nd</sup> semesters of 2020 say they are very dissatisfied with the distance classes; on average, 2.5% thought about changing course.

Analyzing the “impact of the pandemic on the dentistry course” variable, it could be seen that 80.8% feel harmed, with 72.8% of all university students stating that the risk of contagion by Sars-Cov-2 is high with the resumption of clinical care, and another 1.6% say they do not know if there will be a risk of contagion by the virus.

Although the study shows that graduating students (9<sup>th</sup> and 10<sup>th</sup> semesters) claim to be extremely anxious to provide clinical care, 0.5% considered their theoretical-practical performance below the expected limit with the distance learning classes. In the total analysis of the responses, only n=1 individual answered that they considered their theoretical performance to be excellent during this period, but 38.3% of the students were unable to assess accurately.

It is possible to observe that there was no good acceptance of online classes by the students, and the “Insufficient” and “Regular” learning domains are inserted in the student performance variable and directly linked as negative points in the total correlation of the academic performance of the dental students; despite the difficulties in the pandemic period, university students past the 5<sup>th</sup> period do not intend to change course.

**Table 2.** Analysis of behavioral traits in the new perspective of patient care – Belém, PA, 2021

	N	%	X <sup>2</sup>	p-Value
<b>Reflective moments about clinical care</b>				
Afraid to see patients	56	29.8		
Extremely anxious to perform procedures	51	27.1	39.4	0.319
Feel that they have forgotten much of the knowledge	57	30.3		
<b>Impact of the pandemic on the course</b>				
Serious impact	152	80.8	38.0	0.078
<b>Risk of contagion</b>				
High risk	137	72.8	33.2	0.016#
<b>Expectation to provide care</b>				
	188	100	39.9	0.302

#Significance level considered p<0.05.

Table 2 shows that the “Reflective moments about clinical care” makes dental students insecure, due to the risk of contagion ( $p < 0.05$ ) and proliferation of the virus with the resumption of appointments and classes, besides explaining the proportion of impact on student performance during the course.

## DISCUSSION

The social isolation measure is just one of the strategies to contain the viral agent and requires cooperation and the execution of regulations at the local and state levels. It was considered challenging in the face of the reach of social media, so it is crucial that it be used consciously in the academic community, to avoid false rumors and panic about the situation experienced<sup>3,4,13</sup>.

Although students are not considered a higher-risk group in terms of lethality<sup>4</sup>, one of the explanations for this increase in psychological disturbance is them following the news of deaths generated at a global level, as they worry about being contaminated and the rise in positive cases for COVID-19<sup>15</sup>.

Uncertainties caused by the pandemic, psychological pressure, the intensity of emotional crises and measures of containment and social proliferation are factors that are directly linked to the physical and mental behavior of individuals<sup>3,14,16</sup>.

Gradual distancing from contact with friends and family increases psychosomatic symptoms and lowers quality of life (sleep and mental rest), which explains the “break” of isolation and why the related search for means of social relaxation among students is at 13.6% when it comes to “seeing close people”, “engaging in physical activities”, and “having fun”<sup>2</sup>.

Comparing the male and female genders, we see significant differences, as most of the respondents in this study were women; knowing this, the “mental health” domain changes due to the symptoms of post-traumatic stress disorder (PTSD), caused by the pressures of the viral outbreak together with isolation<sup>6</sup>; fluctuations in the levels of ovarian hormones (estrogen and progesterone) are also responsible for the change in sensitivity and emotional stimuli during the phases of the menstrual cycle, and intrusive flashbacks are boosted, creating loads of specific vulnerability (mixed feelings) to psychological disorders<sup>1,8,11,14,15</sup>.

Surveys with the general population in China, conducted in order to assess symptoms acquired in the early stage of the pandemic, involving 1,210 participants from 194 cities, show that moderate to severe anxiety, depression and stress symptoms are visible in the behavior of 28.8%, 16.5% and 8.1% of them, respectively<sup>1</sup>.

Moreover, 75.2% of the respondents are afraid that their family members would contract the disease, which is considered as a psychosomatic agent. Through the quantitative variables, it was analyzed that being a woman, a student and having physical symptoms linked to COVID-19, or previous hormonal health problems, are factors significantly associated with higher levels of anxiety, stress and, consequently, depression<sup>3,17</sup>.

Although online interpersonal communication is on the rise, about 22.8% of the students in this research claim that excessive information about the coronavirus<sup>1,17</sup> increases restriction of feelings. The significance levels generated in this interval were considered  $p > 0.05$ ; as a result, these negative impacts led to morbidity associated with PTSD anxiety and stress crises among the university students<sup>4,7,15-18</sup>.

A study conducted with the general public in China reported that the prevalence rates of psychological distress, such as stress and anxiety, are substantially high (over 25%) during the COVID-19 pandemic<sup>17</sup>.

As for the variables of the graduating students, with regard to clinical skills, 72.8% say that the risk of contagion by Sars-Cov-2 is high; in contrast to other studies, the “Afraid to see patients”, “Extremely anxious to perform procedures”, “Feel that they have forgotten much of the

knowledge” factors directly influence the resumption of post-pandemic clinical care due to the relationship of the care that must be provided to the patient; thus, these events presented medium to high intensity as to anxiety.

Monitoring by UNESCO reports that more than 160 countries closed HEIs nationwide, which would explain the learning impacts in 87% of the world’s student population, generating morbidity<sup>12</sup>.

Experts warn that the impact of the coronavirus will reach higher education worldwide for much longer, even after the pandemic is brought under control. This process generates competitiveness in care services as classes are resumed, due to the need for dexterity in manual skills, preponderated by the time the latter remained unused in public institutions<sup>2,7,11</sup>.

The biggest limitations of this research were the reduced number of answers from the students; despite the acceptance, the researchers were more cautious when generalizing the information obtained; as for the statistical analyses, the data were not considered complex.

In general terms, the research showed the reality in the public institution of the state of Pará, as well as the difficulties of adapting to the reality experienced during the pandemic. It was evident that there is a need for further studies involving dental students from private higher education institutions.

## CONCLUSION

The results obtained in the present study showed that changes in the students’ mental health were attenuated by the adaptive process concerning social isolation; stress factors, anxiety and depressive symptoms triggered major impacts on student performance during the pandemic. It was also understood that this score was expressed in graduating students, due to their susceptibility and ascension by means of clinical activities and professional training.

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## CONFLICTS OF INTERESTS

The authors declare no conflicts of interest.

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