

ANXIETY OF STUDENTS IN A DENTISTRY COURSE IN THE FACE OF SOCIAL ISOLATION**ANSIEDAD DE ESTUDIANTES DE CURSO DE ODONTOLOGÍA ANTE EL AISLAMIENTO SOCIAL****ANSIEDADE DE ALUNOS DE UM CURSO DE ODONTOLOGIA FRENTE AO ISOLAMENTO SOCIAL**

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ABSTRACT

The COVID-19 pandemic was a public health emergency and caused psychological consequences, especially for students in the health field, as they could have direct contact with infected patients during their clinical practice. **Objective:** To analyze the anxiety levels of dental students during the COVID-19 pandemic and their repercussions. **Materials and methods:** This cross-sectional study was conducted with students from the Federal University of Espírito Santo (n=170). Data collection was performed through two online questionnaires: one involving sociodemographic, biosafety, and COVID-19-related aspects, and the Beck Anxiety Inventory. Statistical analysis was performed using the Chi-square test (significance level of 5%). **Results:** Predominant anxiety levels ranged from moderate (45.9%) to severe (40%). Significant correlations were observed among single students (88.1%) and those in the 6th to 10th semesters (82.8%). Those who knew individuals who died from COVID-19 showed moderate to severe anxiety levels (90.1%). **Conclusion:** The majority of students exhibited moderate to severe levels of anxiety, including symptoms such as fear, insecurity, and restlessness.

Keywords: Anxiety; COVID-19; Students; Pandemic.

RESUMEN

La pandemia de COVID-19 fue una emergencia de salud pública y generó consecuencias psicológicas, especialmente para los estudiantes del área de la salud, ya que podrían tener contacto directo con pacientes infectados durante sus prácticas clínicas. **Objetivo:** Analizar los niveles de ansiedad de los estudiantes de odontología durante la pandemia de COVID-19 y sus repercusiones. **Materiales y métodos:** Este estudio transversal se realizó con estudiantes de la Universidad Federal de Espírito Santo (n=170). La recopilación de datos se llevó a cabo mediante dos cuestionarios en línea: uno abarcaba aspectos sociodemográficos, de bioseguridad y cuestiones relacionadas con la COVID-19, y el Inventario de Ansiedad de Beck. El análisis estadístico se realizó mediante la prueba de Chi-cuadrado (nivel de significancia del 5%). **Resultados:** Los niveles predominantes de ansiedad variaron de moderado (45.9%) a grave (40%). Se observaron correlaciones significativas entre los estudiantes solteros (88.1%) y aquellos que cursaban entre el 6.º y el 10.º semestre (82.8%). Aquellos que conocían a personas que fallecieron debido a la COVID-19 presentaron niveles de ansiedad de moderado a grave (90.1%). **Conclusión:** La mayoría de los estudiantes presentaron niveles de ansiedad de moderado a grave, con síntomas como miedo, inseguridad e inquietud.

Palabras clave: Ansiedad; COVID-19; Estudiantes; Pandemia.

RESUMO

A pandemia de COVID-19 representou uma emergência de saúde pública que gerou consequências psicológicas graves, especialmente entre estudantes da área da saúde, devido ao risco potencial de contato direto com pacientes infectados durante suas práticas clínicas. **Objetivo:** Analisar os níveis de ansiedade de estudantes de um curso de Odontologia durante a pandemia de COVID-19 e suas repercussões. **Materiais e métodos:** Este estudo transversal foi realizado com estudantes da Universidade Federal do Espírito Santo (n=170). A coleta de dados foi feita por meio de dois questionários aplicados online: um abordando aspectos sociodemográficos, de biossegurança e questões relacionadas à COVID-19, e outro utilizando o Inventário de Ansiedade de Beck. A análise estatística foi realizada por meio do teste Qui-quadrado, considerando um nível de significância de 5%. **Resultados:** Os níveis predominantes de ansiedade variaram de moderado (45,9%) a grave (40%). Foram observadas correlações entre níveis de ansiedade e alunos solteiros (88,1%) e aqueles matriculados entre o 6º e o 10º período (82,8%). Além disso, estudantes que conheceram indivíduos que faleceram em decorrência da COVID-19 apresentaram maior prevalência de ansiedade moderada a grave (90,1%). **Conclusão:** A maioria dos estudantes apresentou níveis moderados a graves de ansiedade, manifestando sintomas como medo, insegurança e inquietação.

Palavras-chave: Ansiedade; Covid-19; Estudantes; Pandemia.



INTRODUCTION

At the end of 2019, the SARS-COV-2 virus spread rapidly and infected the population worldwide, originating on the Asian continent ⁽¹⁾. The COVID-19 pandemic has been a public health emergency, due to the high virulence, infectivity and transmission mechanisms of the virus, a factor that has generated major anxiety disorders among health professionals ⁽²⁾. Among them, dental surgeons are exposed to a high risk of contamination through the production of aerosols generated during the procedures they carry out on a daily basis, through the use of handpieces, ultrasonic devices and triple syringes, exposing them to droplets of saliva and blood ⁽³⁾. For this reason, dentistry was considered to be one of the professions most at risk of infection during the pandemic ⁽⁴⁾.

Faced with exposure to the virus, professionals began to live with the fear of possible infection, as well as of contaminating other people in their daily lives ⁽⁵⁾. When the pandemic was declared, social distancing measures and the use of masks were adopted in order to reduce the number of people infected and the mortality rate ⁽⁶⁾. The Covid-19 virus has the ability to survive for up to 72 hours once it has settled on surfaces such as plastic and stainless steel ⁽⁷⁾. The symptoms caused by the coronavirus involve a dry cough, shortness of breath, sore throat and headaches, nasal congestion and rhinitis ⁽⁸⁾. Dental teaching at public universities has been suspended for a long time, due to the impossibility of replacing face-

to-face practical classes with remote teaching. As a result, returning to classes and face-to-face clinical practice has become a major challenge, considering the well-being of students, teachers, patients and families ⁽⁹⁻¹⁰⁾.

Under normal conditions, dental students already experience higher levels of stress than the general population during their training, due to the high demands of clinical practice ⁽¹¹⁾. During the pandemic, the lack of personal protective equipment (PPE), the increase in the number of deaths and generalized uncertainty intensified the psychological impact on students ⁽¹²⁻¹³⁾. In addition, the absence of student activities, the delay in completing the course and long periods of lockdown gave rise to moments of uncertainty in the students ⁽¹⁴⁾. In view of the above, the aim of this study was to assess anxiety levels among dental students at a public university in the Southeast region of Brazil during the COVID-19 pandemic.

METHODS

The study was submitted to and approved by the Human Research Ethics Committee of the Federal University of Espírito Santo (UFES) - CAAE No. 31779120.1.0000.5060. All participants had access to and electronically signed the Informed Consent Form (ICF), which was sent along with the questionnaire. This document explained the purpose of the study, its advantages and benefits, as well as guaranteeing the confidentiality of any personal information.



For the sample calculation, an expected prevalence of (50%) was used, with a margin of error of (5%) and a confidence interval of (95%), in order to maximize the sample. The estimated population consisted of approximately 300 students enrolled at the time of data collection, and the final sample comprised 170 students distributed between the third and tenth periods of the course.

This is a descriptive, quantitative, cross-sectional study carried out in August 2020. Data was collected using two questionnaires applied via the *Google Forms* platform[®], and distributed by e-mail and *Whatsapp*[®]. The inclusion criterion for taking part in the survey was being regularly enrolled in the Dentistry course. Those on sick leave, who did not answer the questionnaires in full or who were in their first two terms were excluded, as these students had no experience of clinical activities.

The first questionnaire covered sociodemographic aspects, considering independent variables such as age, gender, race/color, marital status, academic period, place of residence, biosafety and questions related to COVID-19. The second instrument used was the *Beck Anxiety Inventory* (BAI), validated for Portuguese and widely used in different

populations, including academics. Its aim was to assess the degree of anxiety⁽¹⁵⁻¹⁶⁾. The BAI consists of 21 self-report questions, the answers to which are organized on a 4-point Likert scale: 0 (absolutely nothing), 1 (slightly), 2 (moderately) and 3 (severely). The total score, with a maximum of 63 points, allows anxiety levels to be classified into four categories: minimal (0 to 7 points), mild (8 to 15 points), moderate (16 to 25 points) and severe (26 to 63 points).

A descriptive analysis of the data was carried out using frequency tables with numbers and percentages for each of the items in the survey instruments. The relationship between the dependent and independent variables was assessed using the Chi-square test. The significance level adopted was 5%. The IBM SPSS 20 statistical package was used for this analysis.

RESULTS

A total of 170 students answered the questionnaires (56.6%). The majority of students were female (81.2%), 93.5% were single, (97.6%) had no children, (46.5%) lived in Vitória and 30% lived with four people (Table I).

Table I - Demographic data of the research participants.

Features	Number	Percentage (%)
Sex		
Female	138	81,2
Male	32	18,8

Marital status

Single	159	93,5
Married/stable union	11	6,5

She has children

Yes	4	2,4
No	166	97,6

People in the house

One	13	7,6
Two	33	19,4
Three	50	29,4
Four	51	30,0
Five	21	12,4
Six	2	1,2

City of residence

Cariacica	14	8,2
Serra	21	12,4
Vila Velha	23	13,5
Victoria	79	46,5
Other	33	19,4

The subjects reported as causing the most anxiety were anatomy (45.9%) and surgery (31.2%). Most of the students were studying between the seventh and tenth terms (59.4%), and (47.1%) were in clinical activities. When asked about returning to

classes, (51.2%) said that they would be able to afford all the PPE and (69.4%) believed that the university would not be able to provide students with safety items. Furthermore, (58.2%) said they had received training on the correct use of PPE (Table II).

Table II - Academic and biosafety data of the research participants.

Features	Number	Percentage (%)
Course period		
3 - 4	26	15,3
5 - 6	43	25,3



7 - 8	57	33,5
9 - 10	44	25,9
Weekly hours of clinical care		
Up to 4	12	7,1
5 - 8	20	11,8
9 - 12	21	12,4
13 - 16	16	9,4
17 - 20	6	3,5
More than 20	5	2,9
I don't	90	52,9
Can afford to buy all the PPE		
Yes	87	51,2
No	42	24,7
Doesn't know	41	24,1
The PPE you offer is sufficient		
Yes	22	12,9
No	118	69,4
Don't know	30	17,6
Received training to use PPE		
Yes	99	58,2
No	68	40,0
Don't know	3	1,8
Subjects that cause the most anxiety		
Anatomy	78	45,9
Surgery	53	31,2
Pathology	19	11,2
Aggression	13	7,6
Undergraduate Thesis	10	5,9
Orthodontics	9	5,3
Histology	8	4,7



Pediatric Dentistry	8	4,7
Radiology	7	4,1
Endodontics	7	4,1
Biochemistry	6	3,5
Sculpture	6	3,5
Dentistry	4	2,4
Trauma	4	2,4
Restorative Dentistry	3	1,8
Prosthesis	3	1,8
Other	6	3,5
None	24	14,1

Most of the students were not affected by the disease (92.9%), but had friends and family

members who fell ill and died (74.1% and 47.6%, respectively) (Table III).

Table III - COVID-19 data of survey participants.

Features	Number	Percentage (%)
There was COVID-19		
Yes	12	7,1
No	158	92,9
Do you know anyone who has fallen ill with COVID-19?		
Yes, family/friends	126	74,1
Yes, others	42	24,7
No	2	1,2
Do you know anyone who died of COVID-19?		
Yes, family/friends	81	47,6
Yes, others	40	23,5

After analyzing the anxiety questionnaire, we found that the following aspects predominated as never self-perceived: numbness or tingling (74.1%), dizziness or vertigo (61.8), trembling hands (65.9%) and fainting (97.1%). For the moderate classification, the majority reported restless

legs (34.7%), difficulty relaxing (38.8%), nervousness or apprehension and tiredness (34.1%), as well as fear of losing control (31.2%). Finally, for the severe level, (42.9%) reported insecurity or indecision and (36.5%) fear of the worst happening. Table IV shows this data.

Table IV - Percentage distribution of data on anxiety.

Features	Never	Lightweight	Moderate	Grave
Numbness or tingling	74,1	16,5	9,4	0,0
Sensation of heat	40,0	28,8	21,8	9,4
Restless legs	18,8	18,8	34,7	27,6
Difficulty relaxing	7,6	21,8	38,8	31,8
Fear of the worst happening	10,6	21,8	31,2	36,5
Dizziness or vertigo	61,8	21,2	6,5	10,6
Chest pain or palpitation	51,2	26,5	13,5	8,8
Insecure or indecisive	3,5	24,7	28,8	42,9
Frightened	20,6	28,8	27,6	22,9
Nervous or apprehensive	10,6	21,8	34,1	33,5
Choking sensation or "lump in the throat"	61,2	18,2	14,1	6,5
Trembling hands	65,9	11,2	18,2	4,7
Tiredness	17,1	21,8	34,1	27,1
Fear of losing control	22,9	18,8	31,2	27,1
Difficulty breathing	60,6	23,5	8,8	7,1
Fear of dying	55,3	16,5	11,2	17,1
Scared	24,7	41,8	19,4	14,1
Indigestion or intestinal upset	51,2	21,8	17,6	9,4
Fainting	97,1	1,8	1,2	0,0
Facial flushing or sensation of heat	58,8	24,1	11,2	5,9
Sweating (not due to heat)	53,5	26,5	15,3	4,7



The BAI questionnaire was used to determine the students' anxiety levels. The

majority fell into the moderate and severe levels (45.9% and 40% respectively) (Table V).

Table V - Anxiety level of survey participants.

Level	Number	Percentage (%)
Minimum	9	5,3
Lightweight	15	8,8
Moderate	78	45,9
Grave	68	40,0

In Table VI, when the correlation between anxiety levels and sociodemographic aspects was carried

out, we observed a positive relationship between single marital status and moderate/severe levels ($p=0.010$).

Table VI - Relationship between sociodemographic data and level of anxiety.

Features	Minimum/Light		Moderate/Severe		p-value
	N	%	N	%	
Sex					
Female	17	12,3	121	87,7	0,133
Male	7	21,9	25	78,1	
Marital status					
Single	19	11,9	140	88,1	0,010
Married/stable union	5	45,5	6	54,5	
Children					
Yes	0	0,0	4	100,0	0,541
No	24	14,5	142	85,5	
Lives alone					
Yes	1	7,7	12	92,3	0,425
No	23	14,6	134	85,4	

The association between academic data, biosafety and level of anxiety showed that

students between the sixth and tenth periods had moderate/severe anxiety ($p=0.048$) (Table VII).

Table VII - Relationship between academic data, biosafety and level of anxiety.

Features	Minimal/Light		Moderate/Severe		p-value
	N	%	N	%	
Course period					
3 - 5	3	6,2	45	93,8	0,048
6 - 10	21	17,2	101	82,8	
Clinical care					
Yes	11	13,8	69	86,3	0,537
No	13	14,4	77	85,6	
Conditions to buy PPE					
Yes	11	12,6	76	87,4	0,365
No/don't know	13	15,7	70	84,3	
PPE provided is sufficient					
Yes	4	18,2	18	81,8	0,377
No/don't know	20	13,5	128	86,5	
Received training to use PPE					
Yes	17	17,2	82	82,8	0,129
No/don't know	7	9,9	64	90,1	

Finally, there was a positive association between students who knew someone who died

from COVID-19 and moderate/severe anxiety (p=0.015) (Table VIII).

Table VIII - Relationship between COVID-19 and level of anxiety.

Features	Minimum/Light		Moderate/Severe		p-value
	N	%	N	%	
He was diagnosed with COVID-19					
Yes	3	25,0	9	75,0	0,230
No	21	13,3	137	86,7	
Do you know anyone who has fallen ill with COVID-19?					
Yes	23	13,7	145	86,3	0,263
No	1	50,0	1	50,0	
Do you know anyone who died of					



COVID-19?

Yes	12	9,9	109	90,1	0,015
No	12	24,5	37	75,5	

DISCUSSION

Most of the participants in this study had moderate and severe levels of anxiety, (45.9%) and (40%) respectively. Associated with this result, the most prevalent symptoms were restless legs, difficulty relaxing, nervousness or apprehension, tiredness, insecurity or indecision and fear of the worst happening. In fact, the impact of the pandemic on the mental health of university students has been a recurring finding in other studies ^(11,9,17,18,19).

Corroborating this work, in India, a similar study also carried out during the pandemic period found that university students suffered psychological impact, with the highest percentage associated with depression, anxiety and stress ⁽¹⁹⁾. Similar results were found in other studies ⁽⁹⁾ and in a survey teachers at the Federal University of Espírito Santo itself, in which a portion of the participants had moderate levels of anxiety ⁽²⁰⁾.

It is possible that one of the reasons for this is related to the long period of social isolation, which may have contributed to an increase in the perception of anxiety symptoms ⁽²¹⁾. In addition, the many sudden changes in routine, the fear of falling ill, frustration at the delay in training and uncertainty about returning to the course, controversial information,

financial losses and stigma may also have had an impact on students' mental health ^(20,22).

Other relevant findings were the significant association of anxiety levels with single marital status and final periods of undergraduate studies. Similarly, the predominance of students at the Federal University of Santa Catarina was single (94%), in a study on the effects of the Covid-19 pandemic ⁽²³⁾.

A probable justification for the association with the last periods of undergraduate studies is the fact that these participants would face a greater clinical workload in the semester they would be attending, thus increasing contact with the aerosols produced in the dental environment and possible risks of viral contamination ^(9,10).

With regard to the data obtained on biosafety, around (58.2%) of the students reported that they had received training in the use of personal protective equipment (PPE), since they were also in the final periods of the course and had completed the subjects that dealt with the subject. The students in Ataş & Talo Yildirim's survey (2020) also answered correctly about standard measures to protect themselves against COVID-19 ⁽⁵⁾. Even so, it is always necessary to reinforce protocols and attitudes, given the high risk of infection and transmission



of the coronavirus in clinical dental practice^(10,24).

In the present study and that of Almeida et al. (2020), there was a significant association between students with moderate and severe levels of anxiety and those who knew individuals who died from Covid-19. Similar results were found in relation to teachers. A possible explanation for this outcome was linked to partial ignorance of the virus and its impacts at the time the research was carried out. Insecurity and the risk of death were factors capable of interfering with anxiety levels⁽²⁰⁾.

The study's limitation is related to the fact that the research was carried out in a specific context, which is a public university. This may limit the generalizability of the method to other institutions, if they are private. Further research should be done the emotional consequences for students after the pandemic. However, this study provides important information on anxiety and its implications in various areas related to dental students, allowing for the development of support strategies and psychological interventions.

Educational institutions need to implement appropriate support measures for the challenges posed by the pandemic context. These measures include actions to reduce the fear of contamination. In addition, it is essential to promote the emotional care of students, ensuring the provision of psychological assistance to students during critical periods^(11,5,23). As was the case at UFES, given the pandemic context and high levels of anxiety, psychological care

was offered to students. With regard to teaching, universities should look for ways to also provide remote modality, when necessary, taking into account the advances of technology in the educational field.

It can be concluded that most of the students on the dentistry course at the Federal University of Espírito Santo had moderate to severe levels of anxiety during the Covid-19 pandemic, especially those who were at later stages of the course or those who knew someone who died from the disease, thus having physical and emotional consequences.

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