BJOS
Brazilian Journal of Oral Sciences

Volume 21
2022
e226698

Original Research

The psychological impact of social distancing related to the covid-19 pandemic on undergraduate and graduate students in Brazil

Angélica Aparecida de Oliveira[1], Lea Assed Bezerra da Silva[1], Paulo Nelson-Filho[1], Carolina Maschietto Puccinelli[1], Clara Marina Pereira Cavalcanti Silva[1,*], Raquel Assed Bezerra Segato[1]

[1] Department of Pediatric Dentistry, Dental School of Ribeirão Preto, University of São Paulo, Ribeirão Preto, São Paulo, Brazil.

Corresponding author:
Clara Marina Pereira Cavalcanti Silva
Rua Cavalheiro Torquato Rizzi, 2025 – Apto. 75, Jardim São Luiz, Ribeirão Preto – SP, 14020-300
clarac@usp.br
+5582993611190

Editor: Altair A. Del Bel Cury

Received: August 17, 2021
Accepted: April 02, 2022

Aim: To evaluate the psychological impact of COVID-19 on undergraduate and graduate students of the Dental School of Ribeirão Preto, University of São Paulo. **Methods:** Three questionnaires were used: sociodemographic, WHO Abbreviated Quality of Life Inventory, and General Anxiety Disorder-7. Data were analyzed using Graph Pad Prism 7a (α = 5%). Mann-Whitney or Kruskal-Wallis and Dunn post-tests were used for statistical comparisons. The Spearman test was used as the correlation test. **Results:** 257 students responded to the online form that assessed their quality of life and anxiety level. On a scale from 1 to 100, with 100 being the best quality of life, the average obtained was 64.71 (± 13.36). In addition, 87.6% of the students rated their quality of life as good or very good. 74.7% reported good or very good health. The anxiety analysis resulted in an average of 10.04 (± 4.5), indicating moderate anxiety levels. There was an inversely proportional correlation between age and degree of anxiety (p = 0.008, r = -0.1628) and self-perceived learning and student commitment (r = 0.69). **Conclusion:** Despite the good quality of life and the students' good self-perception of health, they showed a moderate degree of anxiety during the social distancing caused by COVID-19, also demonstrating a decrease in interest and commitment during distance education.

Keywords: Coronavirus infections. COVID-19. Patient health questionnaire. Anxiety. Students, dental.

Introduction

COVID-19, caused by the infection of the SARS-CoV-2 virus, has become a pandemic[1] because of its rapid spread and high mortality and morbidity rate worldwide[2]. As a result, there have been several social and educational changes since the beginning of the pandemic, employing preventive measures of social distancing, the use of face masks, and regular handwashing with soap or disinfection with 70% alcohol[3].

The sudden change in students' daily lives in social isolation, combined with distance learning on a scale never experienced before, has impacted their quality of life, negatively affecting their feelings, eating habits, sleep, among others[4,5]. In addition, several studies describe that the pandemic had a tremendous emotional impact, causing an increase in psychological problems, such as anxiety, stress, and depression[6,7], both in the general public[8] and in university students in China[9] and Greece[10].

About 24.9% of the university students in China experienced anxiety due to the COVID-19 outbreak. The protective factors against anxiety found were living in an urban area, living with parents, and having a stable family income. Conversely, having a family member or acquaintance infected with COVID-19 was a risk factor. Likewise, academic delays, different effects on daily life, and economic instability acted as stressors[9]. University students in Greece showed increased anxiety, depression, and suicidal thoughts. In addition, they also reported worsening of sleep quality, sex life, and quality of life[10]. Both studies concluded that the mental health of university students was significantly affected by the COVID-19 pandemic and emphasized the need for specific psychological care for this population group[9,10].

Dental professionals are at the highest risk of spreading COVID-19 due to the generation of aerosols, contact with blood and saliva, and the proximity to the patient during consultations[11-13]. Therefore, there was a change in the recommendations for dental care, with restrictions to only perform urgent and emergency care[14]. In addition, care at the Schools of Dentistry was suspended in some countries, which harmed the ability of these students, and new biosafety protocols were proposed to minimize the risk of infection, with the addition of new personal protective equipment (PPE)[15,16].

All these changes and concerns related to dentistry students have affected their present and future lives. However, there is no study on the mental health situation of university students in dentistry in Brazil. Thus, the objective of this work is to evaluate the psychological impact of the COVID-19 pandemic on undergraduate and graduate students in Dentistry at the Ribeirão School of Dentistry of the University of São Paulo (FORP/USP), using validated questionnaires to assess the quality of life and the degree of anxiety.

Material and methods

This cross-sectional study followed the STROBE recommendations (Strengthening the Report on Observational Studies in Epidemiology) through the validated Portuguese version published in 2010. The data were collected remotely in Brazil, between July 10, 2020 and August 4, 2020, during the COVID-19 pandemic period.

Initially, the research project was submitted to the Research Ethics Committee of the School of Dentistry of Ribeirão Preto, University of São Paulo, approved under nº 4.143.131. In a non-probabilistic approach, a convenience sample was formed by *stricto sensu* undergraduate and graduate students from School of Dentistry of Ribeirão Preto. The criteria for inclusion in the study include being a student regularly enrolled at the School of Dentistry and agreeing to participate in the study by signing the Informed Consent Form (CIF). *Lato sensu* graduate students and students from different colleges of the same University were not included in the study, even if they carried out their research or elective courses at the School of Dentistry. No other criteria were added.

It was determined that the main variables of interest were quality of life and anxiety. Personal information was based on the students' self-perception, and no additional method was used to test these variables. All of this information was collected by using three study instruments: a sociodemographic questionnaire developed by the authors with specific information about the students during quarantine, WHOQOL-bref (World Health Organization Abbreviated Quality of Life) to assess their quality of life, and GAD-7 (General Anxiety Disorder - 7) to evaluate the signs and symptoms of anxiety.

1. Sociodemographic Questionnaire (Annex A) - addressed the topics of age, gender, marital status, and specific information about students during the quarantine to contextualize the data obtained in the other questionnaires.

2. WHO Abbreviated Quality of Life (WHOQOL-BREF) (Annex B) - validated in Portuguese by Fleck et al. (2000)[17], containing 26 questions, two of which are general quality of life questions, and the remaining 24 represent each of the 24 facets that make up the original WHOQOL-100 instrument. The data were transformed into a scale of 0-100, with 100 being the best quality of life[18].

3. General Anxiety Disorder – 7 (GAD-7) (Anexo C) - an instrument for assessing, diagnosing, and monitoring anxiety, validated by Kroenke et al. (2010)[19], according to the criteria of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). This questionnaire contains seven questions about how the individual has been feeling in the past two weeks, with four possible answers: 0 (not once), 1 (several days), 2 (more than half the days), and 3 (almost every day), with a final score ranging from 0 to 21. A positive indicator of signs and symptoms of anxiety disorders is considered to be a value equal to or greater than 10, with values from 1 to 5 indicating mild anxiety, 6 to 10 moderate, and 11 to 15 severe.

The questionnaires were sent to students by the Google Forms Platform, whereas the invitation to participate and explain the work via email, by the undergraduate and graduate sector of FORP USP. In addition, they were posted on Instagram and WhatsApp to reach a more significant number of students at the School of Dentistry of Ribeirão Preto.

The data were analyzed using the Graph Pad Prism 7a statistical program (Graph Pad Software In., San Diego, California, USA), using the appropriate tests for each evaluation. The level of significance adopted was 5%. The Mann-Whitney or Kruskal-Wallis

and Dunn post-test were used for statistical comparisons. The Spearman test was used as the correlation test.

Results

A total of 257 undergraduate and graduate students answered the online questionnaires; 65% were undergraduate students, and 35% were graduate students (50% master's and 50% doctoral levels). The majority of the sample was composed of women (76.3%). The age group with the most significant number of participants was 20 to 25 years old, with 53.7%, and only 5.1% declared to be over 36 years old. Further sociodemographic and specific information about students during the quarantine period is described in Table 1.

Table 1. Results of the online form related to sociodemographic data and some specific information.

Age	Gender	Level of Education	Marital status	Spirituality
<20 (12.1%) 20-25 (53.7%) 26-30 (22.6%) 31-35 (6.6%) > 36 (5.1%)	Female (76.3%) Male (23.7%)	Graduate (65%) Masters (17.5%) Doctorate (17.5%)	Single (70%) Relationship (19.8%) Stable union (1.6%) Married (7%) Divorced (0.8%) Widowed (0.8%)	Yes (81.3%) No (18.7%)
Scholarship	**Moved from your city to study at FORP**	**During the pandemic you**	**Works to complement income**	**Income decrease**
Yes (48.2%) No (51.8%)	Yes (78.6%) No (21.4%)	Stayed in Ribeirão Preto (26.8%) Returned to your parents' home (63.4%) Other (9.7%)	Yes (18.7%) No (81.3%)	Yes (58.8%) No (41.2%)
Attended any online course offered during the pandemic	**How do you classify your learning level during the pandemic**	**How do you classify your performance in courses during the pandemic**	**Compared to presential pedagogical activities, your productivity in remote (distance) activities was:**	**Have a quiet and calm place to attend online classes and study**
Yes (89.5%) No (10.5%)	Excellent (3.9%) Good (45.9%) Average (34.2%) Bad (10.5%) Terrible (5.4%)	Excellent (10.5%) Good (45.9%) Average (33.1%) Bad (8.9%) Terrible (1.6%)	Much better (5.4%) Better (12.5%) Neither better nor worse (42%)	Yes (82.9%) No (17.1%)
Have good internet access	**Have children**	**The need to care for your child (ren) influenced your studies in any aspect**	**Wanted to drop the course during the pandemic**	**You or someone in your family tested positive for Covid**
Yes (96.9%) No (3.1%)	Yes (3.9%) No (96.1%)	Yes (70%) No (3%)	Yes (31.5%) No (68.5%)	Yes (16.7%) No (83.3%)

The average score for quality of life was 64.71 (± 13.36), indicating good quality of life. The results are described in Figure 1.

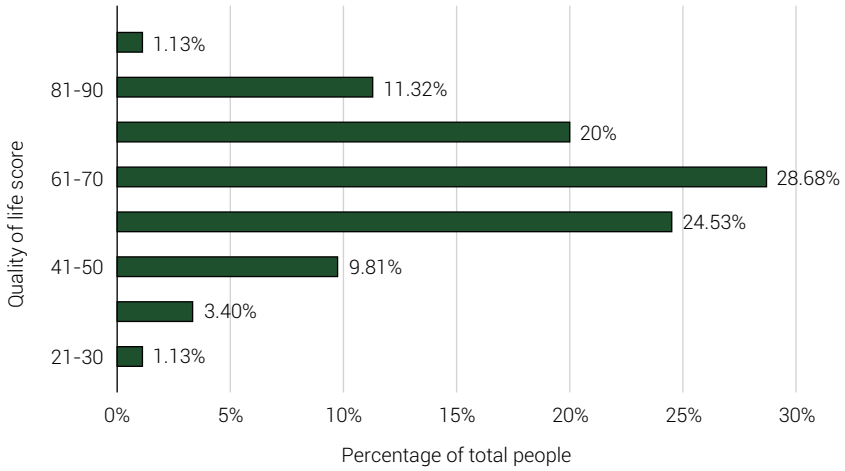

Figure 1. Graphical representation of the results from the evaluation of quality of life.

Of the total participants, 87.6% rated their quality of life as Good or Very Good. 74.7% of the respondents also reported having Good or Very Good health.

The students' degree of anxiety analysis resulted in an average of 10.04 (± 4.5), indicating a moderate degree of anxiety. Figure 2 shows the results from this analysis.

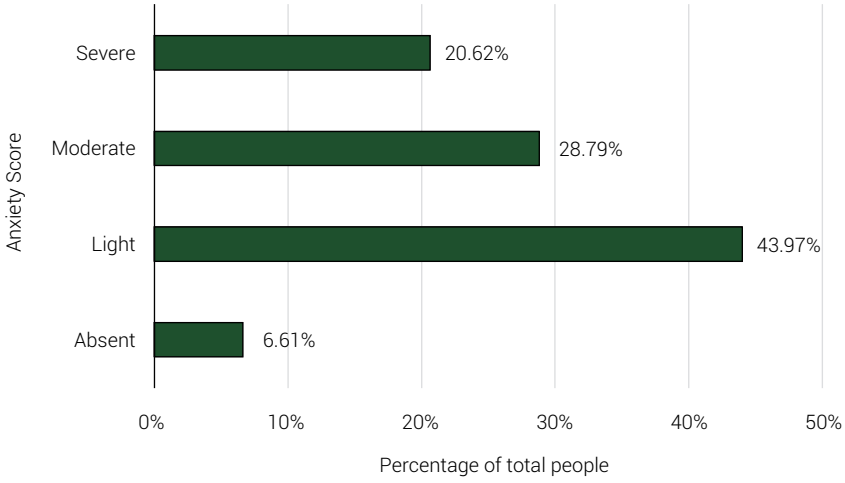

Figure 2. Graphical representation of the results after analyzing the students' level of anxiety.

When age and degree of anxiety were analyzed (Figure 3), an inversely proportional correlation was observed, with p=0.008 and r=-0.1628, demonstrating that the older the student, the lower the degree of anxiety.

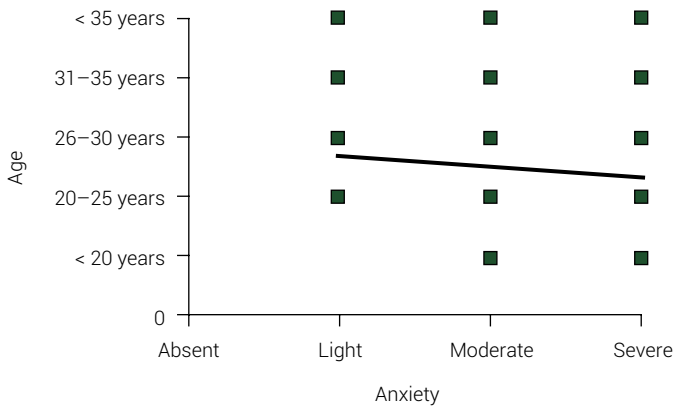

Figure 3. Graphical representation of results after the correlation between anxiety and age.

The students' performance showed a positive correlation with their self-perception of learning (r=0.69), meaning that the greater the students' commitment, the more they perceived how much they had learned (Figure 4).

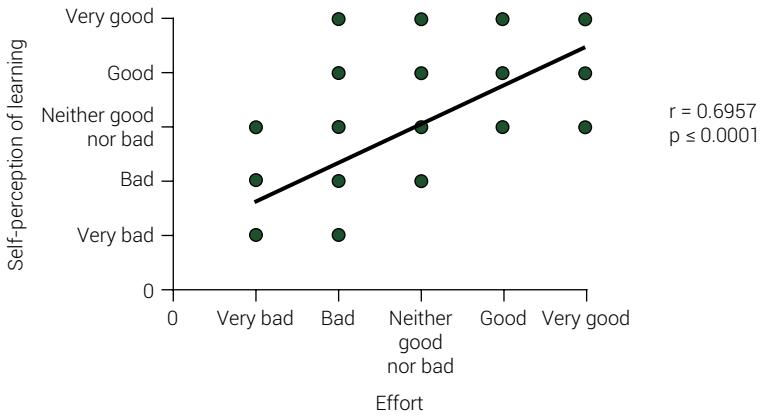

Figure 4. Graphical representation of the results from the correlation between the efforts and self-perception of learning.

Students whose income was reduced during the pandemic had a statistically greater degree of anxiety, as depicted in Figure 5.

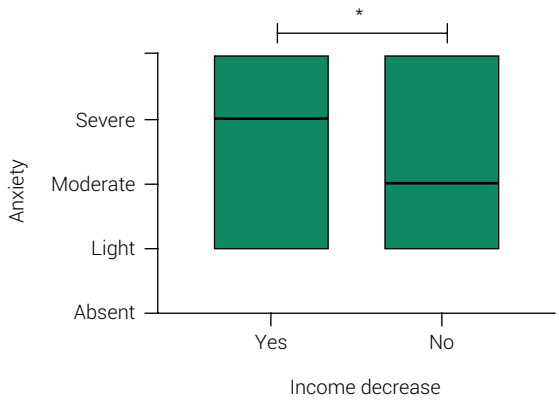

Figure 5. Results from the correlation between anxiety and income. (*) represents statistical difference

Discussion

This survey revealed that 93.39% of those students were experiencing some degree of anxiety during the period of confinement caused by the COVID-19 pandemic. This result is consistent with what was reported by Agius et al. (2021)[20], Iosif et al. (2021).[21], Hakami et al. (2021)[22], and Cayo-Rojas et al. (2021)[23]; in their studies at universities in Malta, Bucharest, Saudi Arabia, and Peru, respectively; they concluded that most students developed anxiety.

Other studies also reported that the high percentage of anxious university students might be related to several factors, such as changes in teaching methodology that went from in-person to entirely online due to the pandemic[24], in the feeling of uncertainty about their academic and professional careers[7,24] and the potential negative impact on their academic progress[25]. Furthermore, because dental courses rely heavily on practical training and manual skills throughout preclinical and clinical studies, recent studies have shown that the leading cause of anxiety in dental students was the loss of dexterity, insofar as various clinical procedures require manual and fine motor skills[20,21].

In a group of university students in Spain, Odriozola-Gonzáles et al. (2020)[26] observed that the participants had moderate to extremely severe anxiety, depression, and stress scores and noticed that students seem to have suffered a significant psychological impact during the first weeks of the quarantine resulting from COVID-19. Likewise, in our study, we observed that students had moderate anxiety. Student anxiety may be associated with the gradual increase in distance between people resulting from social isolation. Anxiety disorders are more likely to occur and worsen without interpersonal communication[26]. Some factors can have prevented severe anxiety in this study, as most students reported they had spirituality, returned to their parents' home, nobody tested positive for COVID, and had good internet access, facilitating social interaction and decreasing boredom[9,27].

Most students were women, aged between 20-25, aspects that have already been associated with risk for mental illness[28]. Despite this, our study did not find signifi-

cant differences between male and female students regarding the quality of life or anxiety, corroborating Caio-Rojas et al. (2020)[29]. These findings indicate that male and female students have experienced similar tensions and negative emotions due to the pandemic.

Regarding the decrease in family income during the period of social distancing, this was a factor that significantly increased the anxiety experienced by students during the COVID-19 pandemic, also found in other studies[9,30]. This could be explained by adversities in dealing with job losses, difficulties in paying bills in addition to the challenges of the pandemic itself. Therefore, not only this factor, but others already mentioned, may have been considered by the students as contributing to their degree of anxiety, which explains the wide distribution of anxiety data in this analysis.

There was an inversely proportional correlation between age and degree of anxiety. According to other studies, younger students also suffered greater psychological impacts[23,31], which could be explained by factors including perceptions about the future and how media is consumed, as evidenced by another study[32]. However, this may be different for older students because they have less social mobility and probably have more life experience and, therefore, another perspective on their future.

The present study showed that the greater the students' commitment, the more they perceived learning during the social distance. However, it is essential to highlight that mental health disorders, such as anxiety, negatively influence students' commitment and learning, decreasing motivation and concentration.

According to projections regarding COVID-19 cases in progress at the time of this study and their impacts, university students need immediate attention and psychological support[32]. As suggested by a recent study[33] based on the Italian experience of the pandemic, it is essential to assess the population's stress levels and psychosocial adjustment to plan the necessary support mechanisms, especially during the recovery phase and similar events in the future.

After applying questionnaires to undergraduate and graduate students during the social distancing caused by the Covid-19 pandemic, it can be concluded that, despite the good quality of life and good self-perceived health of the students, they had a moderate degree of anxiety during social distancing, also demonstrating a decrease in interest and commitment during distance education. Thus, to better understand the current situation and how it will impact the post-pandemic period, it is necessary to investigate how the pandemic has caused anxiety and its consequences. To ensure the mental health of their students due to social isolation, the authorities of various universities should develop plans and strategies[34,35]. They can prevent anxiety levels from rising by identifying them early and taking action[29].

The main limitation of the present study is that it was carried out on a particular population. Therefore, the results cannot be convincingly extrapolated to the general population.

Data availability

Datasets related to this article will be available upon request to the corresponding author.

Conflict of Interest

None

Author contribution

Conceptualization: Angélica Aparecida de Oliveira, Léa Assed Bezerra da Silva e Raquel Assed Bezerra Segato. Methodology: Angélica Aparecida de Oliveira, Carolina Maschietto Puccinelli, Formal analysis: Carolina Maschietto Puccinelli. Investigation: Angélica Aparecida de Oliveira. Resources: Angélica Aparecida de Oliveira, Léa Assed Bezerra da Silva e Raquel Assed Bezerra Segato. Data curation: Angélica Aparecida de Oliveira, Raquel Assed Bezerra Segato. Writing—original draft preparation: Angélica Aparecida de Oliveira, Carolina Maschietto Puccinelli. Writing—review and editing: Paulo Nelson Filho, Clara Marina Pereira Cavalcanti Silva. Visualization: Angélica Aparecida de Oliveira, Clara Marina Pereira Cavalcanti Silva. Supervision: Léa Assed Bezerra da Silva e Raquel Assed Bezerra Segato. Project administration: Raquel Assed Bezerra Segato. Funding acquisition: none. All authors have read and agreed to the published version of the manuscript.

References

1. Pan American Health Organization. [WHO says COVID-19 is now characterized as a pandemic]. PAHO; 2020 Mar 11 [cited 2020 Jul 6]. Available from: https://www.paho.org/pt/news/11-3-2020-who-characterizes-covid-19-pandemic. Portuguese.
2. World Health Organization. Weekly epidemiological update - 12 January 2021. WHO; 2021 Jan 12 [cited 2021 Jand 30]. Available from: https://www.who.int/publications/m/item/weekly-epidemiological-update---12-january-2021.
3. Davenne E, Giot JB, Huynen P. Coronavirus et COVID-19 : le point sur une pandémie galopante [Coronavirus and COVID-19 : focus on a galopping pandemic]. Rev Med Liege. 2020 Apr;75(4):218-25. French.
4. Silva PGB, de Oliveira CAL, Borges MMF, Moreira DM, Alencar PNB, Avelar RL, et al. Distance learning during social seclusion by COVID-19: Improving the quality of life of undergraduate dentistry students. Eur J Dent Educ. 2021 Feb;25(1):124-34. doi: 10.1111/eje.12583.
5. Elsalem L, Al-Azzam N, Jum'ah AA, Obeidat N, Sindiani AM, Kheirallah KA. Stress and behavioral changes with remote E-exams during the Covid-19 pandemic: A cross-sectional study among undergraduates of medical sciences. Ann Med Surg (Lond). 2020 Dec;60:271-9. doi: 10.1016/j.amsu.2020.10.058.
6. Duan L, Zhu G. Psychological interventions for people affected by the COVID-19 epidemic. Lancet Psychiatry. 2020 Apr;7(4):300-2. doi: 10.1016/S2215-0366(20)30073-0.
7. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS et al. Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. Int J Environ Res Public Health. 2020 Mar;17(5):1729. doi: 10.3390/ijerph17051729.
8. Chen Q, Liang M, Li Y, Guo J, Fei D, Wang L et al. Mental health care for medical staff in China during the COVID-19 outbreak. Lancet Psychiatry. 2020 Apr;7(4):e15-e16. doi: 10.1016/S2215-0366(20)30078-X.

9. Cao W, Fang Z, Hou G, Han M, Xu X, Dong J et al. The psychological impact of the COVID-19 epidemic on college students in China. Psychiatry Res. 2020 May;287:112934. doi: 10.1016/j.psychres.2020.112934.

10. Kaparounaki CK, Patsali ME, Mousa DV, Papadopoulou EVK, Papadopoulou KKK, Fountoulakis KN. University students' mental health amidst the COVID-19 quarantine in Greece. Psychiatry Res. 2020 Aug;290:113111. doi: 10.1016/j.psychres.2020.113111.

11. Harrel SK, Molinari J. Aerosols and splatter in dentistry: a brief review of the literature and infection control implications. J Am Dent Assoc. 2004 Apr;135(4):429-37. doi: 10.14219/jada.archive.2004.0207.

12. Ather A, Patel B, Ruparel NB, Diogenes A, Hargreaves KM. Coronavirus Disease 19 (COVID-19): Implications for Clinical Dental Care. J Endod. 2020 May;46(5):584-95. doi: 10.1016/j.joen.2020.03.008.

13. Becker K, Brunello G, Gurzawska-Comis K, Becker J, Sivolella S, Schwarz F, et al. Dental care during COVID-19 pandemic: Survey of experts' opinion. Clin Oral Implants Res. 2020 Dec;31(12):1253-60. doi: 10.1111/clr.13676.

14. Gurzawska-Comis K, Becker K, Brunello G, Gurzawska A, Schwarz F. Recommendations for Dental Care during COVID-19 Pandemic. J Clin Med. 2020 Jun;9(6):1833. doi: 10.3390/jcm9061833.

15. Pan Y, Liu H, Chu C, Li X, Liu S, Lu S. Transmission routes of SARS-CoV-2 and protective measures in dental clinics during the COVID-19 pandemic. Am J Dent. 2020 Jun;33(3):129-34.

16. Ren YF, Rasubala L, Malmstrom H, Eliav E. Dental Care and Oral Health under the Clouds of COVID-19. JDR Clin Trans Res. 2020 Jul;5(3):202-10. doi: 10.1177/2380084420924385.

17. Fleck MP, Louzada S, Xavier M, Chachamovich E, Vieira G, Santos L, et al. [Application of the Portuguese version of the abbreviated instrument of quality life WHOQOL-bref]. Rev Saude Publica. 2000 Apr;34(2):178-83. Portuguese. doi: 10.1590/s0034-89102000000200012.

18. Malibary H, Zagzoog MM, Banjari MA, Bamashmous RO, Omer AR. Quality of Life (QoL) among medical students in Saudi Arabia: a study using the WHOQOL-BREF instrument. 2019 Sep;19(1):344. doi: 10.1186/s12909-019-1775-8.

19. Kroenke K, Spitzer RL, Williams JB, Löwe B. The Patient Health Questionnaire Somatic, Anxiety, and Depressive Symptom Scales: a systematic review. Gen Hosp Psychiatry. 2010 Jul-Aug;32(4):345-59. doi: 10.1016/j.genhosppsych.2010.03.006.

20. Agius AM, Gatt G, Vento Zahra E, Busuttil A, Gainza-Cirauqui ML, Cortes ARG, et al. Self-reported dental student stressors and experiences during the COVID-19 pandemic. J Dent Educ. 2021 Feb;85(2):208-15. doi: 10.1002/jdd.12409.

21. Iosif L, Țâncu AMC, Didilescu AC, Imre M, Gălbinașu BM, Ilinca R. Self-Perceived Impact of COVID-19 Pandemic by Dental Students in Bucharest. Int J Environ Res Public Health. 2021 May;18(10):5249. doi: 10.3390/ijerph18105249.

22. Hakami Z, Khanagar SB, Vishwanathaiah S, Hakami A, Bokhari AM, Jabali AH, et al. Psychological impact of the coronavirus disease 2019 (COVID-19) pandemic on dental students: a nationwide study. J Dent Educ. 2021 Apr;85(4):494-503. doi: 10.1002/jdd.12470.

23. Cayo-Rojas CF, Castro-Mena MJ, Agramonte-Rosell RC, Aliaga-Mariñas AS, Ladera-Castañeda MI, Cervantes-Ganoza LA, et al. Impact of COVID-19 mandatory social isolation on the development of anxiety in peruvian dentistry students: a logistic regression analysis. J Int Soc Prev Community Dent. 2021 Apr;11(2):222-9. doi: 10.4103/jispcd.JISPCD_52_21.

24. Cornine A. Reducing nursing student anxiety in the clinical setting: an integrative review. Nurs Educ Perspect. 2020 Jul/Aug;41(4):229-34. doi: 10.1097/01.NEP.0000000000000633.

25. Pillay N, Ramlall S, Burns JK. Spirituality, depression and quality of life in medical students in KwaZulu-Natal. S Afr J Psychiatr. 2016 Mar;22(1):731. doi: 10.4102/sajpsychiatry.v22i1.731.

26. Odriozola-González P, Planchuelo-Gómez Á, Irurtia MJ, de Luis-García R. Psychological effects of the COVID-19 outbreak and lockdown among students and workers of a Spanish university. Psychiatry Res. 2020 Aug;290:113108. doi: 10.1016/j.psychres.2020.113108.

27. Kmietowicz Z. Rules on isolation rooms for suspected covid-19 cases in GP surgeries to be relaxed. BMJ. 2020 Feb;368:m707. doi: 10.1136/bmj.m707.

28. Wang C, Zhao H. The Impact of COVID-19 on Anxiety in Chinese University Students. Front Psychol. 2020 May;11:1168. doi: 10.3389/fpsyg.2020.01168.

29. Cayo-Rojas CF, Agramonte-Rosell RC. Challenges of virtual education in dentistry in times of COVID-19 pandemic. Rev Cubana Estomatol. 2020;57(3):e3341.

30. Fancourt D, Steptoe A, Bu F. Trajectories of anxiety and depressive symptoms during enforced isolation due to COVID-19 in England: a longitudinal observational study. Lancet Psychiatry. 2021 Feb;8(2):141-9. doi: 10.1016/S2215-0366(20)30482-X.

31. Al-Shayea EI. Perceived depression, anxiety and stress among Saudi postgraduate orthodontic students: a multi-institutional survey. Pak Oral Dental J. 2014 Jul;34(2):296-303.

32. Holmes EA, O'Connor RC, Perry VH, Tracey I, Wessely S, Arseneault L et al. Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. Lancet Psychiatry. 2020 Jun;7(6):547-50. doi: 10.1016/S2215-0366(20)30168-1.

33. de Girolamo L, Peretti GM, Maffulli N, Brini AT. Covid-19-The real role of NSAIDs in Italy. J Orthop Surg Res. 2020 May;15(1):165. doi: 10.1186/s13018-020-01682-x.

34. Sahu P. Closure of universities due to coronavirus disease 2019 (COVID-19): Impact on education and mental health of students and academic staff. Cureus. 2020 Apr;12(4):e7541. doi: 10.7759/cureus.7541.

35. Ozamiz-Etxebarria N, Dosil-Santamaria M, Picaza-Gorrochategui M, Idoiaga-Mondragon N. Stress, anxiety, and depression levels in the initial stage of the COVID-19 outbreak in a population sample in the northern Spain. Cad Saude Publica. 2020 Apr;36(4):e00054020. English. doi: 10.1590/0102-311X00054020.