BRIEF COMMUNICATION

The impacts of the COVID-19 pandemic on the teaching of dentistry in Brazil

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Abstract
A new disease called coronavirus disease 2019 (COVID-19), caused by the severe acute respiratory syndrome coronavirus-2 (SARS-COV-2) virus, was discovered in the city of Wuhan in China in December 2019, and has reached, quickly and progressively, several countries on different continents. Even before the World Health Organization recognized the COVID-19 epidemic as a pandemic, the Brazilian Ministry of Health had already declared COVID-19 a national public health emergency due to the confirmation of cases in Brazil. In this scenario, the educational sector was one of the first to suffer the effects of the pandemic soon after the announcement of social distancing as a way to prevent the collapse of the Unified Health System. The aim of this paper is to report how Brazilians dental schools are leading with the new coronavirus pandemic.

KEYWORDS
COVID-19, dental school, dentistry

A new disease called coronavirus disease 2019 (COVID-19), caused by the severe acute respiratory syndrome coronavirus-2 (SARS-COV-2) virus, was discovered in the city of Wuhan in China in December 2019, and has reached, quickly and progressively, several countries on different continents. In early March, the director general of the World Health Organization (WHO) recognized the COVID-19 epidemic as a pandemic because the disease had already caused 4291 deaths and infected >118,000 people in 114 countries.¹ In February, the Brazilian Ministry of Health had already declared COVID-19 a national public health emergency due to the confirmation of cases in Brazil.

In this scenario, the educational sector was one of the first to suffer the effects of the pandemic soon after the announcement of social distancing. The Brazilian Supreme Court of Justice decided to grant to states and municipalities the decision on the implementation of necessary measures to fight the pandemic using epidemiological data from each location as a thermometer. However, following the WHO guidelines, most mayors and governors suspended face-to-face classes at education institutions, among other measures, aiming to prioritize social isolation in an attempt to reduce the spread of the virus and prevent the collapse of the Unified Health System.

Then, the Ministry of Education authorized the replacement of on-going classroom subjects for remote classes in undergraduate courses using information and communication technology platforms. The objective was to maintain the student’s study routine and create a virtual...
Higher education institutions, on an emergency basis, provided digital platforms for remote classes. However, there was no prior training, which requires a gradual adaptation of the use of such tools. Thus, professors sought alternatives and teaching strategies to engage students who had opted for face-to-face classes upon entering undergraduate courses.

With such a challenge, undergraduate and graduate courses in dentistry and students who opted for face-to-face classes had their theoretical classes delivered live in remote classes. The practice (laboratory, preclinical, and clinical), which is important for the development of specific skills of dentist training, was suspended. There was also a search for alternative methods to apply tests using tools of information and communication technologies (ICTs) aiming a safe application of virtual tests. However, the adoption of these technologies in Brazil is still limited due to low accessibility by the low-income population, which does not always have compatible electronic equipment and access to a quality Internet network.

New multimedia tools have driven significant social and cultural changes in modern society. These resources have allowed the maintenance of the student-teacher relationship in real time, differentiating it from distance learning.

ICTs potentiated the flow of information in remote educational environments, allowing the student, an interacting individual, to break hierarchical knowledge. A group from Italy, a country severely affected by the pandemic, reported in an article that self-learning among students improved their ability to use online resources and somehow encouraged learning independence.

However, it is responsibility of dentistry faculties to promote, by structuring pedagogical projects, the development of students’ skills in diagnosis, planning, and treatment of orofacial pathologies through the clinical care they offer to the population. Adaptation of techniques and refinement of manual dexterity are part of the daily training of dentistry students. However, how can these qualities be developed within a pandemic scenario? Could these activities be carried out in a simulated way using specific software or other techniques?

One of the challenges of higher education is to create new pedagogical models that promote students’ creativity in order to avoid exhausting the traditional model of teaching centered on the figure of the teacher. In view of the reality of the Brazilian population in the COVID-19 epidemic, the work of teachers has become challenging. The search for alternatives for the development of students’ skills and competences, as provided for in the pedagogical plan of courses, has been incessant, highlighting remote classes.

For basic courses, the use of virtual blades and other software allows manual practice through virtual means. The challenge is greater in specific courses. Thus, a suggestion is to work on the discussion of interdisciplinary clinical cases in small groups of students aiming to plan, analyze, interpret, and make logical decisions, in addition to working on communication and interpersonal relationships. Other possibilities are the adoption of software to perform interactive activities, such as Kahoot!, game design by students, Quiz etc.

Health promotion can be worked on by disseminating educational material, such as educational videos and folders, on social networks. Another possibility is to make calls and send messages to patients at the school clinic using the institution’s database. Such contact with the patient aims individual educational guidance by updating signs and symptoms of disease progression, always following guidelines and the legislation of the respective agencies in Brazil.

For the development of manual skills in different dental specialties, it is possible to propose the acquisition or adaptation of training materials, such as the use of dish-washing sponges, ox tongue, pig jaw, wax/soap sculptures, assembly training in a semi-adjustable articulator, molding, making removable orthodontic appliances, etc. All these activities are carried out with remote supervision by the teacher who assists students, guiding and correcting them whenever necessary.

In view of these uncertainties, the organization of commissions of teachers, dental class councils, and the Brazilian Dental Education Association (ABENO), thought of a safe way for students and professors to return to undergraduate and graduate courses in Dentistry. This proposition was based on evidence and scientific publications. The group published manuals on biosafety standards containing guidelines for adapting physical spaces, necessary equipment, and behavior in school clinics to this new reality until the development of a vaccine.

The American Dental Association and the Brazilian Federal Council of Dentistry (CFO) have recommended the use of extraoral imaging tests (panoramic radiography and cone beam computed tomography) preferably to intraoral examinations due to the tactile stimulus to salivary flow during execution of these techniques. In addition, the Brazilian Association of Dental Radiology (ABRO), together with the CFO, carried out a campaign to increase the digital flow of imaging exams performed in dental radiology clinics, eliminating the stage of transport and handling of printed exams aiming to prevent the virus from spreading. However, it is known that there is a need to adapt practice physical spaces of undergraduate courses in Dentistry in Brazil for the interpretation of these digital images. On the other hand, the low purchasing power of
most patients seen in clinical schools, who cannot afford CT scans, is well known. In this context, it is important to emphasize that intraoral radiographs have certain indications and are valuable in providing complementary data essential to the diagnosis of some pathologies. They also help in planning. Therefore, they must be performed whenever necessary.\textsuperscript{6,7}

In addition, one of the safest ways to acquire practical clinical skills in healthcare, including Dentistry, is simulation exercises without the need for the student’s physical presence in the clinical environment and, obviously, without a direct contact with patients. The advance in virtual reality (VR) has allowed simulation technologies to create a series of opportunities for education systems in health centers. Such systems provide the tutor and students with continuous and integrated feedback.\textsuperscript{8}

VR simulators have the capability of tactile feedback, which allows students to touch and feel the dental tissue virtually. Studies have shown that the use of VR has improved the acquisition of medical dexterity in Dentistry courses in the operative area.\textsuperscript{9} However, a high investment from colleges is required to offer this type of teaching methodology.

Thus, as professionals of dental teaching institutions, we must be aware of new education models and new VR simulation technologies and consider them as a useful and complementary tool for our students, given the current world pandemic situation and future illnesses that may arise. Perhaps this modality, already practiced in some developed countries, will become fundamental in universities and a conventional dental training approach. Its effective and safe use for both students and patients is possibly one of the many changes that will allow remote learning during the COVID-19 pandemic and in the years that follow this event.

Finally, a greater attention is needed to the mental health of the student and the teaching staff. Despite existing knowledge, the scale of this pandemic is different, as are its effects on the population. A recent study has shown that this pandemic has deleterious effects on the mental health of university students. This fact reinforces the need to continue investigating this issue to understand the mechanisms of psychological reactions underlying such an atypical and challenging period of life.\textsuperscript{10}

Sadness, anxiety, and confusion generated by the information transmitted by the media have been detected and are constantly associated with isolation. The results of a study have shown a significant increase in psychological distress in university students during a pandemic period compared to that of normal periods.\textsuperscript{10} Thus, it is likely that students may need counseling and psychological support services during and after the COVID-19 pandemic to minimize the negative impacts on teaching and the development of their skills. There are reports of students taken by the fear of being infected by the virus, the lack of contact with colleagues, and the insecurity of real learning during this period. Institutions must have the feeling of knowing how to deal with this situation in the best possible way and with less impacts for the entire community.

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REFERENCES
1. World Health Organization. 2020. WHO Director-General’s opening remarks at the media briefing on COVID-19 – 11 March 2020. \url{https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19—11-march-2020}. Accessed June 1, 2020.
2. BRASIL, Ministério da Educação. Relator: ABRAHAM WEINTRAUB. Diário Oficial da União, portaria 343, art.1, Brasília, DF, 17 mar. 2020. Accessed June 1, 2020.
3. Xavier TB, Barbosa GM, Meira CLS, Conte Neto N, Pontes HAR. Use of dentistry education web resources during pandemic COVID-19. Braz J Hea Rev. 2020;3(3):4989-5000.
4. Prati C, Pelliccioni GA, Sambri V, Chersoni S, Gandolfi MG. COVID-19: its impact on dental schools in Italy, clinical problems in endodontic therapy and general considerations. Int Endod J. 2020;53:723-725.
5. American Dental Association. ADA Interim guidance for minimizing risk of COVID-19 transmission. \url{https://www.ada.org/InterimGuidance}. Accessed April 1, 2020.
6. Conselho Federal de Odontologia. Manual de boas práticas em biossegurança para ambientes odontológicos. \url{http://website.cfo.org.br/wp-content/uploads/2020/04/cfo-lanc%C3%A7a-Manual-de-Boas-Pra%C3%85ticas-em-Biosseguran%C3%A7a-para-Ambientes-Odontologicos.pdf}. Accessed June 4, 2020.
7. ABRO. Campanha imagens digitais. \url{https://www.abro.org.br/campanha-imagens-digitais/}. Accessed June 4, 2020.
8. Hollis W, Darmell LA, Hotell TL. Computer assisted learning: a new paradigm in dental education. J Tenn Dent Assoc. 2011;91:14-18.
9. Buchanan JA. Use of simulation technology in dental education. J Dent Educ. 2001;65:1225-1231.
10. Maia BR, Dias PC. Anxiety, depression and stress in university students: the impact of COVID-19. Estud Psicol. 2020;37: e200067.

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