

COVID 19 Impact and Exploring New Avenue for Dental Education

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Abstract:

The corona virus (COVID-19) has challenged healthcare professionals and those in dental education, evoking various response methods worldwide. Due to the COVID-19 pandemic crisis, many dental schools and instructors are reevaluating the way they teach and interact with students. This article stated that the probable impacts of the outbreak of pandemic on dental education and its methodologies, clinical research, and its psychological impacts on students. New perspectives regarding a change in face-to-face activities, social isolation and the reformulation of clinical activities result in a transition toward e-learning and e-teaching methods. The COVID-19 crisis has also shown that there is a severe underestimation of the role of the amenities and advanced technologies for e-oral health education and services, as well as tele-dentistry.

Keywords: Corona virus, dentistry, oral health, eLearning, counseling, psychological impact, Communication.

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Background

Originating in Wuhan in China in late 2019, COVID-19 is a novel disease that has spread to many countries worldwide.^{1,2} COVID-19 pandemic has forced the world into a health and economic crisis. Various countries have established different quarantine forms, interrupting numerous ordinary routines and affecting work, free movement, trade, and education.³ Novel coronavirus (severe acute respiratory syndrome coronavirus 2, SARS-CoV-2; formerly 2019-CoV) might leads to death due to alveolar damage and lung fibrosis that leads to progressive respiratory damage.⁴ Similarly to other β -corona virus, SARS-CoV-2 was probably hosted by a bat and other Asian mammals and transmitted to humans.⁵ World Health Organization declared a COVID-19 pandemic on 12 March 2020. At the time, COVID-19 symptoms include fever, cough, anosmia,

dysgeusia, and dyspnea. Clinical management is a mainly symptomatic treatment that might require respirational aid with organ support in the intensive care unit. No specific antiviral therapy available, but antiviral, antimalarial drug and biological drugs are having been administered in clinical trials.^{6,7} Several authors described the impact of COVID-19 in dental practice, but Meng et al. provided dental education recommendations.⁸ The most significant task concerns the measures to ensure dental education activities during the infection phase. Dental schools and allied hospitals are a potential contagion site. Regarding dentistry, it should be considered clinical training by dental professionals via protective and infection control elements. However, very little is known about how dental education and research are affected.⁹

INTRODUCTION:

Due to the COVID-19 pandemic there was broke up in to direct teaching educational activities with dental students worldwide. Instructors are scrambling to adapt to social distancing. The duration of quarantine and social isolation are unpredictable, and some virtual alternatives are being used to continue teaching activities.¹⁰ Dental school professors have continued to work from home and examinations as rebuilt graduation requirements.¹¹ Moreover, in many dental colleges, especially in low-income countries, dental students are more susceptible to infections, including COVID-19, due to more inadequate knowledge and insufficient infection prevention.¹² Well-known platforms like YouTube, email, Google educational tools, Skype, Facebook, Instagram, Telegram, and WhatsApp, are intensively used worldwide for theoretical contents and are now modify to this new resolution. At many institutions, recent classroom conferences and lectures using video conference systems like Zoom, Microsoft Teams, WebEx etc. were implemented.

Electronic platforms for academic education during the COVID-19 era

The COVID-19 crisis revealed that we had underrated the e-oral health infrastructure and education role, including tele dentistry, which is incipient.¹¹ Electronic platforms, video conferencing networks are being used for theoretic purposes. Generally, students were found to have positive imitations despite technical problems and related stresses. While these platforms are helpful because they are already structured and universal, but they still require improvements, constant maintenance, and a quality internet connection. Open and paid media, such as Zoom or WebEx, are exciting alternatives to classroom settings, although they depend on a quality internet connection. Students had satisfactory adaptation and memorization. Virtual platforms' valuations were not altered significantly and facilitators easily adjusted to this new learning method. Although using physical means, indirect education is a more effective transmission modality for clinical case-based

discussions; internet-based discussions on virtual platforms create a more relaxed discussion atmosphere. At this point, the debate on new content and educational approaches could be unified. Other frequently used learning platforms are Microsoft Teams and Google Meet and its additional resources, Google Classroom, and Hangout.¹⁰ Google Meet allows live activities with up to 250 simultaneous participants, with the possibility of sharing the presenter's screen by allowing various didactic actions. Besides, with the consent of all participants, the activity can be recorded and stored. Social media platforms, including Instagram, Facebook, WhatsApp, Telegram, and YouTube, are widely used as teaching substitutes.

The psychological impact of COVID-19 on dental students

It should be known that throughout the COVID-19 pandemic crisis, students may suffer from depression and can be negatively affected by the fear of being infected. Therefore, the need for counseling and psychological help should increase following the COVID-19 pandemic. The initiative was taken based on moral judgment to cease all patient cares for undergraduate and postgraduate clinics to save the lives of students, staff, and patients which in turn prompted further discussion on this subject.¹³ Inevitably, dental students were anxious due to the high viral exposure to front line medical personnel involved in disease rates and demises, mostly medical students. Doctors and the high volume of patients have put many dental students and the dental team in danger.

Care for staff members, professors, and student's

Different degrees of proximity to COVID-19 create the need for social isolation and distancing, and uncertainties about the pandemic's outcome can significantly affect staff members and students' mental health. The pandemic's consequence can dramatically affect students' mental health and staff member's for students, concern about the delay in completing graduation, and post-graduation is an additional issue. This context can cause anxiety, poor sleep, short sleep duration, predisposing people to

depression and post-traumatic stress disorders.¹⁴ Mental health disorders negatively impact learning and academic achievement.¹⁵ Thus, monitoring of staff members and students by the direction of college is significant. Even in indecision, holding regular meetings, especially with students, can reassure them and decrease anxiety. There are also low-income students in private dental schools in smaller amounts. Considering this situation and the high financial cost of dental education, many students need a job to attain their goals. Thus, considering the continuing critical pandemic crisis, it is practical to hypothesize an increase in dropout rates in individual countries' dentistry courses. This aspect must also be cautiously considered by higher education institutions, administrations, both public and private.

Challenges and impact of COVID-19 on dental education

After announcing the need for social distancing and reducing all face-to-face contacts such as teaching and training programs, the immediate impact of COVID-19 on dental education was observed quite early.^{8,16} Worldwide, colleges have been facing the devastating pandemic outburst. Lockdowns in pre-clinics and clinics limited to no access to clinical education opportunities for students and no available treatment for patients are just some challenges faced in dental education. The list of difficulties further includes millions of losses in revenue sources; the economic instability, collapse of research programs and grants; suspension of academic conferences, graduation ceremonies, and ceremonies of convocation; and dramatic shifts in pre-planned projects and activities. Moreover, it influences recruiting new academics and scientists, causing psychological impacts on students and faculty.¹¹ Many dental schools have discontinued clinical practices except for emergencies, while others conduct social distancing in their laboratory pre-clinical simulation activities.

Direct and open communication with tutors, peers, and the relevant educational team has proven to increase trust and cooperation.¹⁶ Also, they globally advised the higher education institutions to prioritize

the safety and well-being of their students and staff, ceasing all on-campus teaching. The American Dental Education Association (ADEA) led concerning teaching modalities such as online education and other creative teaching methods. It also connects faculty and administrators on the ADEA to share ideas and resources to implement during these times. Dental education is in fact a critical profession that requires many preparations on the part of educators, not only in various specialties of the discipline but also with specific teaching and learning methodologies.¹⁷ Both dental schools and postgraduate teaching providers subsequently halted their daily face-to-face teaching, hands-on laboratory training, and clinical training under supervision. Therefore, they necessitated alternative presentation and assessment teaching modes through written online reports, multimedia workshops, problem-solving sessions, webinars, and computer-based exams.¹⁶ Pre-clinical and clinical training is of the utmost importance for students. During this stage, the students learn various manual and cognitive skills that prepare them to enter the dental profession. Providing face-to-face activities with the students stand as a barrier. Therefore, all those methodologies requiring direct interaction with students are no longer valid. Using the internet allows the communication between academics and students through virtual libraries, emails, chatting, video conferencing, webinars, and telecommuting to provide a better-suited education. Dentistry around the globe have moved onto a virtual field. Developed innovative communication technologies were to educate and interact with staff and students about remote service and crisis-related strategies to sustain interconnections while improving mental health by minimizing the sense of isolation.

With modern technology, students have access from home to each lecture's contents, thus avoiding attendance to decrease infection risk. In some forms, e-learning facilitates self-learning among students and further adapts their style of informational acquisition.¹⁸ The main aim of dental education is to train independent dentists to effectively and safely treat their patients. Outstanding manual dexterity and fine motor skills are skills that must be attained

by the students. But teaching these skills to the required level is problematic in that the time and resources available are limited. Virtual reality (VR) brings a range of educational opportunities in dental schools, offering continuous on-screen integrated feedback.¹⁶

Examinations and assessments, the lockdown has led dental schools to organize studies entirely online (50%), postpone formative assignments (46%), or defer summative assessments (42%). Some schools still wish to have some examination elements held in person (19%). However, most schools (72%) considered a postponing of evaluating required clinical competencies for the students. Changes in assessment schedules or extension of the program date, particularly about clinical hours, rather than reduce the clinical requirements to graduate are planned to provide efficiency and ease.¹⁹

It has resulted in a dental program that is entirely virtual. The virtualized curriculum plan is tied to be expected in COVID-19 duration. While dental clinics and schools plan to reopen immediately after their respective states have issued guidance. It is essential to recognize the potential need to broaden the virtual curriculum in some ways to accommodate the financial situation caused by the pandemic.¹²

Impact of COVID-19 on dental research

The COVID-19 outbreak notably resulted in the cancellation of the national and international conference and dental research events. Due to compulsory government and institutional policies, limiting non-essential research activities, suspension of most laboratory-based dental research projects and postgraduate student research projects was unavoidable. Consequently, some dental researchers changed their focus to off-campus and electronic studying, such as conducting literature reviews and online surveys.¹⁶

Challenges and Impact of Covid-19

Covid-19 has had a devastating impact on the dental industry. With the pandemic still on the growth curve, it is difficult to ascertain the extent and severity of its long-term implications at this point. The professional future of dental practitioners and

the sustenance of their practices is a serious concern. With most of India's courses failing to adhere to strict hygiene protocol, sanitization and sterilization at dental practices are widely absent, which further increased the risks in performing emergency dental procedures. Dentistry today needs a complete structural change to prevent doctors as well as patients from getting infected.¹³

The possible positive impact of COVID-19

The rise in international and national interactions between universities and the growth of cooperation is substantial.⁴ Dentistry faculty operate in educational and academic institutions and small hospitals and operating companies with high maintenance and service costs. The contributions they provide are significant to the community's health and well-being and the economy as a whole. Offering oral health care services and stimulating the economy by organizing students, educators, and workers, domestically and internationally, and helping industry and businesses thrive cannot ignore the impact of these faculties.¹⁶

The internet is a powerful resource for reaching millions of people in different geographical regions and serves as an engine to continue education. During this period of COVID-19 isolation, there is an opportunity for dental students and practitioners to build and retain theoretical and clinical dental expertise through many educational instruments.²⁰ Graduate and postgraduate students were banned from coming to the dental school and hospital. Administrative and secretarial activities were only accessible online. Examinations have shifted on the web: intermediate and summative examinations and graduation sessions have been performed online. The beginning of the new semester has been postponed.²¹ Part of the clinical training activities of dental students will be carried out by presenting case reports to the tutors, reading and reviewing scientific articles, interactive learning tutorials based on clinical cases, and update training in cross-infection control.

Before resuming their clinical services, dental professionals should correctly use personal

protective equipment (PPE) to protect themselves and avoid a new infection spread.

After a month of distance education, it concludes our trial: •examinations conducted online are probably not the ideal way to evaluate students in health education, as it was possible to verify their skills only theoretically;

1. Students and professors appreciated the e-learning platform along with teacher-student interaction.

2. Remote activities cannot replace clinical training, and therefore, these assets will have to be recovered in the next session;

3. Distance learning has proven effective in limiting the spread of COVID-19 infections in universities.

Dentistry's field is facing its darkest hour yet, with the growth and spread of the COVID-19. Dentists are at the highest risk of contracting and transmitting the Coronavirus, along with nurses, paramedics, and other healthcare workers. With the spread of Coronavirus still on the growth curve, there is no hope of reviving with zero earnings by dental practitioners and staff at clinics.²¹

Creating Awareness: The Communication need

Communication has become prime essential in an era of information, as it overloads from various sources. Communication and education are required between dentists, allied health care professionals, and connection to patients and communities. The dental surgeon needs to find the right way of articulating knowledge and information to prevent fear-mongering among patients and create apprehension by being genuine and precise. Healthcare professionals can consider forming a digital hybrid learning platform to create awareness, regulate important information through social media platforms, or conduct webinars to influence more people positively. Also, there is a need for telemonitoring in dentistry to curb panic and fear and communicate facts. The pandemic has allowed us to educate them about preventive care, which was earlier considered a sidebar in treatment. One should also not miscalculate the patient's knowledge and ability and their right to seek all relevant information.²¹

Post-COVID: A future perspective

Considering our new reality, it is possible to continue educating theoretical content, keeping students' uneven access to quality internet, especially those with a low-income background. However, few adequate replacements are available to dental students today, considering pre-clinical and clinical scenarios. Moreover, dentistry will have to ensure a greater convergence with medicine.⁴ We should re-evaluate our way of delivering classes and lectures and our curriculum with this new reality. The coronavirus pandemic highlights a need for further research in this area to educate our students more comprehensively. It should also stimulate our educational councils to formulate institutional policies that generate new options. They must also make significant investments in dental school, clinics to adapt to the new bio-safety reality of the post-pandemic period to return to clinical activities.⁹ The government should come forward to cooperate with the dental and medical profession to ensure dental surgeons get all the help they need to tide through these extraordinary circumstances.²¹

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