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Post-COVID Opportunities and Challenges in Healthcare:
Advancing Oral Healthcare



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PERSPECTIVE



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The emergence of the COVID-19 virus had a dramatic impact on dental care, especially in the early days

when concerns about transmission of the virus via aerosols resulted in severe restrictions on dental services. Oral healthcare professionals moved quickly to wearing full PPE, use of high filtration surgical masks for all procedures, and monitoring air purification systems in their offices. Education and research programs in dental schools had to rapidly pivot to include remote learning and split-team work in research laboratories and clinics. Whilst very challenging, paradoxically, the pandemic forced us to think laterally and respond quickly to the crisis. We had to implement processes that, perhaps, were not fully tried and tested. Dental researchers enthusiastically engaged in COVID-19 related research, focusing on how to enhance safety and reduce risk of transmission and infection. There were compelling reasons to reach out and collaborate with colleagues outside of dentistry, and this greatly benefitted society.

Now is the time to take stock and decide how we can harness this experience to enhance our respective programs as we emerge through the crisis. The commentaries in this issue focus on the lessons we have learned in oral health, and the resulting opportunities to enhance clinical care around the world. Dr. Jorge Martinez, associate director of health sciences, School of Medicine and Health Sciences, Tecnológico de Monterrey, discusses the need to share this new knowledge with colleagues across the healthcare spectrum, and for oral healthcare professionals to learn from other fields. Dr. Zaid Baqain, provost and professor of oral and maxillofacial surgery at Mohammed Bin

“Dental researchers enthusiastically engaged in COVID-19 related research, focusing on how to enhance safety and reduce risk of transmission and infection. There were compelling reasons to reach out and collaborate with colleagues outside of dentistry, and this greatly benefitted society.”

Rashid University of Medicine and Health Sciences in Dubai, agrees with that assessment, and both of them refer to the need for greater opportunities for interdisciplinary learning in dental schools.

Together, we can share our recent experiences and learning points and not be afraid to introduce disruptive change into our clinical practice, research, and education programs. Dental educators need to accelerate the pace of embracing technology-enabled learning and embed this in our learning environments. There are new areas of interdisciplinary research, such as improving the design of dental operatories to reduce the potential infectivity of airborne viruses and bacteria.

There is justifiable concern about growing inequalities in both the prevalence of dental disease and access to dental services within and among countries. Dr. Martinez highlights the use of teledentistry to enhance access to patients, particularly those in remote communities. As yet, this has not been widely reported in dentistry, but use of telehealth grew in medical services since the start of the pandemic.

There is an opportunity to re-imagine the service delivery model for dentistry, including more routine use of telehealth. This is especially relevant for older, less mobile patients. Dr. Sebastian Paris, head of the Department of Operative, Preventive and Pediatric Dentistry and scientific director, Center for Oral Health Sciences at Charité - Universitätsmedizin Berlin, discusses the role of artificial intelligence in oral healthcare, a growing interest as we try to improve population oral health. There is potential for meaningful collaboration between oral healthcare providers, data scientists, and public health specialists in this space.

All the commentators note the importance of sustainability, and it is timely that we reflect on how we can sustain our workforce and improve our contribution to resource and waste management. In light of recent experience, academic health systems are uniquely positioned to provide thought leadership for enhanced preparedness in anticipation of future disruptive crises.



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Here in Dubai, we are in the midst of an Emirate-wide consolidation of our healthcare capacity. The Dubai Academic Health Corporation, established in July 2021, seeks to improve health outcomes and enhance the healthcare sector in Dubai through the creation of an integrated academic health system. The institution where I work, Mohammed Bin Rashid University of Medicine and Health Sciences (MBRU), will be part of this new system. In the near-term, my priorities are to meet the expectations of that system, which puts patient interests first and prioritizes delivery of healthcare based on evidence and best practice with a focus on safety, outcomes, and population health.

We, as oral healthcare providers, are working ardently to ensure that we do our part to meet expectations for deliverables under the new system. This includes enhanced training for working in the Emirate-wide health system while simultaneously pursuing quality improvements in care and sustaining safety. Related changes will be needed across the curricula. We need to do more to ensure that our staff and learners are well prepared to work in interprofessional teams. I envision that we will continue to strengthen our collaborations in healthcare delivery, education, and research. I also anticipate that our role as an academic health center positions us to contribute uniquely to the new Corporation's work through a focus on preventive dental measures, awareness campaigns, and capacity-building programs.

In terms of challenges moving forward, our immediate focus is on how we can best integrate with other healthcare providers. How, for example, can we best align our strategies and operations with those of dental services now available in the public sector? How do we make sure that our graduate-level training and capacity-building programs are aligned to meet

the needs of the integrated health system? How do we ensure that we have one integrated electronic dental record system, which in turn is integrated into electronic patient health records?

Interestingly, experiences during the pandemic helped us prepare for the work of a consolidated health system. We learned a great deal about delivering healthcare remotely. We made better use of digital workflow to support our administration, teaching, care, and communications. Staff who were deployed during the pandemic to areas outside their immediate specialties learned new skills for collaboration. We learned how to work more effectively with partners locally and internationally. In general, we learned how to be more agile. The design thinking that we engaged during the pandemic prepares us well to re-envision the delivery of healthcare in Dubai.

Operationalizing our new ways of working will help make healthcare more equitable. We are moving forward with the support of philanthropy and endowments to expand how we serve patients who might otherwise not be able to access quality care. Dubai is very heterogeneous and multiethnic, with a population that is 85 percent ex-pat. That diversity enables our future workforce to train in serving patients from many different backgrounds. We welcome building opportunities for students and health professionals to come here for short-term stints to mutually share in learning experiences in equitable treatment or care for a diverse population. Equally, we also welcome conversations with international organizations interested in research collaborations or other mutual interests.

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Here, students who wish to become dentists, doctors, psychologists, nutritionists, or other health professionals all start by taking a three-semester block of courses in general health topics. One goal of that approach is to help integrate the health team and to encourage students to treat patients from a multidisciplinary approach. For example, part of our training includes multidisciplinary clinics where students who will ultimately pursue different health professions collaborate to examine a patient's clinical history, and then jointly decide the most appropriate course of treatment.

We take a similar approach to teaching about oral health. As one example, we deliver instruction via a multidisciplinary seminar in which all learners, regardless of the health sciences profession they will ultimately pursue, approach a problem or topic in oral health from the different points of view of each discipline. In that manner, we use our integrated approach to health education to also integrate instruction about oral health.

One impact of the pandemic has been that it has forced us to learn how to better apply technology, both for our academic and research endeavors as well as for the delivery of healthcare via telehealth. In dentistry, the pandemic has helped us to focus intently on improving our protocols for caring for patients in the clinic, making these interactions safer in terms of infection control. Our work to improve such protocols is ongoing and something that we do every day. In general, such efforts help make our faculty and our students more aware of our responsibilities as part of the community.

Going forward, a central challenge for us will be doing more to adopt and institutionalize some of the new post-pandemic strategies, protocols, and technologies. It will also be important for us to use emerging technologies effectively to share the knowledge we have gained about addressing threats

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like COVID-19 and to learn from others who have also developed relevant insights. Such sharing needs to be not just inter-institutional but also international. Another challenge going forward will be finding effective ways to resume delivery of healthcare, including oral healthcare, to rural communities.

We are currently adjusting some of our strategies for healthcare delivery. As one example, we are working to build instruction about how to deliver care via telehealth into our courses. We are also working to integrate new protocols we have developed for delivering oral healthcare into our regular methods for conducting business. Both our academic and patient communities must adapt new post-pandemic strategies into their daily lives.

In all of this work, we must remain vigilant about advancing equity in healthcare. As important as COVID-19-related research is, for example, we must also continue research that helps us learn to improve the way we serve vulnerable populations, including the poor and patients in rural areas. As we expand healthcare programs online after the pandemic, and as we expand our healthcare offerings overall, we must ensure that such resources are readily available to all populations.



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As a profession that works in close contact with patients and is daily exposed to potentially infective aerosols, dentistry was heavily affected in the first months of the COVID-19 pandemic when infection risks and transmission routes were still unclear. Many dental clinics closed for longer periods, safety measures were significantly levelled-up, and treatments were limited to emergencies. Now, in the third year of the pandemic, there is growing evidence that conventional protective measures are effective and the risk of being infected during dental procedures is rather low for both patient and personnel.

While COVID-19 attracted much notice in the past two years, other global megatrends that will challenge our profession in the upcoming decades did not lose relevance. I briefly discuss just three of them.

Epidemiology and demography

Over the past decades, dental disease prevention resulted in an overall significant gain in oral health in most industrialized countries. Today, more and more people retain their teeth lifelong while enjoying an increased life expectancy. However, in parallel, the burden of dental diseases constantly shifts toward older people and (often socially deprived) high-risk groups who benefit from prevention to a lesser extent. During pandemic lockdowns and restrictions, it was these groups that suffered most from dental undertreatment. The concept of office-based, highly specialized dental care does not reach these patients effectively, as they experience social and financial difficulties in actively seeking dental preventive care and treatment. Dentistry will need to develop methods, concepts, and structures to improve oral health for these underserved populations.

Digitalization

A second challenge for dentistry is digitalization and the application of artificial intelligence (AI). Digitalization already changed the manufacturing process of dental restorations. In the future, the increased use and processing of patient health data using deep learning will also revolutionize dental diagnostics. While AI has the potential to improve individualized oral care, the increased demands on data literacy of dental personnel and patients, as well as the possible dependency on global companies that deal with patient data and health services, have the potential to shake up our profession.

Sustainability

A third global megatrend that will impact dentistry is sustainability. As the medical sector accounts for about five percent of global carbon emissions, medicine and dentistry will have to make their contribution toward decarbonization. The current pandemic, which produced millions of tons of medical waste, showed how hard it is to match protection of natural resources and high medical standards. In industrialized countries, where our highly developed medical system so far relies on enormous economic and natural resources, the future need to limit consumption might even be at the expense of individual (oral) health. Sustainable dentistry will not be reached by just using wooden toothbrushes but by a careful weighing-up of costs and benefits.

I believe that these trends will challenge our profession even more than COVID-19. However, the current pandemic showed that we are able to cope with enormous challenges when we face them early enough.

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