COVID-19 and virtual learning in dentistry: Perspective on challenges and opportunities

Sir,

The effects of novel coronavirus disease 2019 (COVID-19) are far reaching. Across the world, many governments closed educational institutes in an attempt to curb the spread of pandemic.[1] Educators across countries were put to the task of virtually teaching dentistry, a course that was designed to be taught face to face and which inherently comprises of developing clinical skills. The pandemic led to an abrupt transition from traditional to virtual classrooms.[1,2] However, the switch to virtual teaching and learning posed challenges to the educators and the students, especially in developing countries.[3] The availability of internet facilities was a primary challenge, while the development of skills and understanding of available technology were among the others.

In India, the University Grants Commission held workshops for teachers of higher education institutes to prepare them for virtual teaching. The educators continued routine activities of skill and knowledge development by engaging the students in virtual classes, tests, pedagogy, and sharing the course material online with the aid of various digital learning management systems (LMS) and other platforms. On the background of COVID-19, various websites for LMS, communication tools, and development of online content made their services freely available to facilitate education. For examination, LMS allows evaluation of papers based on customized scoring criteria. However, the use of unfair means by students in examinations continues to pose a challenge.

The second problem was how to impart practical and clinical knowledge virtually? For this, basic and clinical subjects used case-based, objective structured clinical examination and three-dimensional or virtual reality models. In the absence of patients, examinations can be conducted on dental models, typodont, and phantom heads with water inlet to simulate patient's oral cavity. In addition, pathologists have transitioned to the whole-slide imaging to ensure virtual access to the slides, thereby making teaching easier.[4]

Conventionally, attending and presenting at the conferences was an important aspect of personal and professional development for the students and faculty. To cope with these, online conferences have been designed that enable participants to present their work in front of

Table 1: Problems encountered and possible solutions for virtual teaching, learning, and assessment in dentistry

Criteria	Problems faced	Possible solutions
Virtual teaching and learning	Use of technology and communication	Training the faculty and students for effectively using the available technology for online teaching and learning
		Enrolling an IT consultant
		Enrolling the students in LMS
		Certified workshops for motivated learning and quick understanding
		Use of various social networking sites for effective communication
	Engaging students in online learning	Creating focus groups
		Online polls during or after the lecture
		Creating online audiovisual content and 3D visual models for demonstrations
	Active learning	Sharing the material prior to lecture so that students can participate in the learning process
		Post-lecture test and assignment
		Creating and sharing online content
	Integrating theoretical and clinical knowledge	Case-based learning
		3D virtual models, virtual reality, and augmented reality models
	Gauging the outcome	Providing timely feedback to students
		Inviting student feedback
Assessment	Avoiding malpractice	Assigning a small group of students to an invigilator to observe during exams
	Conventional assessment system	Workplace assessments have been modified to online OSCE
		Providing case-based scenarios with sophisticated MCQs
		Time-limited MCQs on Google Forms where the order of the questions can be randomized
	Assessment of clinical work	Case-specific differentials, discussions, and exercises

MCQs=Multiple-choice questions, OSCE=Objective structured clinical examination, LMS=Learning management system, 3D=Three-dimensional, IT=Information technology

eminent faculties from the safety of their homes. Moreover, webinars with internationally acclaimed speakers were arranged and made freely available. To keep the students engaged, online quizzes and polls are being incorporated.[5]

Virtual learning has to a large extent encouraged critical thinking and promoted student participation and innovation by means of group activity, tests, and assignments. The use of single regulated platforms for assignments helps students learn at their own pace and self-evaluate their growth. Overall, we have found potential solutions for many problems encountered in virtual learning and skill development [Table 1]. Still, there is a need for innovative methods to actively engage students and enable learning virtually. Training and motivation can help educators to teach and evaluate students remotely. Development of digital content, though time-consuming, might soon become a vital part of teaching in future. Considering the changing times, we need to adapt and evolve to teach, learn, and unlearn for a better tomorrow.

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