

Changing Trends In Dental Education During Covid -19

Pandemic –A Review

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ABSTRACT

The coronavirus (COVID-19) has spread to many countries across the world since its origin. Once the need for "social distancing" was announced as a primary preventive tool, there has been deficiency of all face-to-face contact in teaching and training programs which lead to the impact of COVID-19 on the field of dental education. Dental education is such that it needs live patients for demonstration of clinical skills by teachers as well as for practice by dental students along with lectures for theoretical concepts. At this time, distant teaching methods using the internet, enables communication between academics and students through virtual libraries, lectures through web portals, video conferencing webinars and telecommuting. During this pandemic time various dental schools across the globe are focussing on virtual reality simulating patients using various technologies like 'haptic' etc. VR simulation technology is a valuable resource to traditional dental training methods to be considered during the COVID-19 pandemic to enable distance learning.

Keywords: COVID-19, dental education, dentistry, VR simulation

Introduction:

COVID-19 (CO-Corona, VI- Virus, D- Disease)¹ is a novel disease originated in Wuhan city of China, in December, 2019. It has spread to many countries across the world since its origin. The COVID-19 pandemic has forced the world into a health and economic crisis. All the affected countries in the world, have established different forms of lockdown, interrupting numerous ordinary

routines and affecting work, free movement, trade, and, in particular, education²

Amid the time of COVID-19 pandemic, face-to-face classroom educational activities with undergraduate and postgraduate dentistry students have been nearly interrupted worldwide. Educators are scrambling to adapt to social distancing (self-quarantine) and some virtual alternatives are being used to continue teaching activities.³

Challenges and Influence of COVID-19 pandemic on dental education:

Once the need for "social distancing" was announced as a primary preventive tool, there has been deficiency of all face-to-face contact in teaching and training programs which lead to the impact of COVID-19 on the field of dental education.^{4, 5}

Worldwide, all the institutes including dental institutes have been facing the devastating COVID-19 pandemic outbreak. Lockdowns and strict need for social distancing in pre-clinics and clinics, caused clinical learning inaccessible to dental students. The parallel problems further includes economic instability; suspension of academic conferences and convocation ceremonies; and unwanted shifts in pre-planned projects and activities until unpredictable time.⁶

Dental education is such that it needs live patients for demonstration of clinical skills by teachers as well as for practice by dental students along with lectures for theoretical concepts. Because of this pandemic, all the dental colleges in India have suspended classroom lectures and halted the patient work in clinics except for emergencies, although now they are planning to start preclinical simulation activities in their laboratory with social distancing.

At this time, distant teaching methods using the internet, enables communication between academics and students through virtual libraries, lectures through web portals, video conferencing webinars and telecommuting. These all methods allow a better suited way of education and enable us to teach dental curriculum and ensuring the learning outcomes associated with all skills required.⁶ Tools like smart phone applications and demonstrative videos of all kinds of preclinical and clinical learning methods are an effective solution to keep the theoretical development up-to-date. All academic implementation of these tools would ensure the quality of education.⁷

Of late almost all the dental colleges started arranging lectures for their students through various web portals which has a common issue of network connectivity but the biggest challenge is to keep the students on other side attentive as there is no face to face interaction which occurs in physical classroom teaching. Moreover ensuring even physical presence of students on other side while using slide share mode is also a hidden issue in online lectures.

Preclinical and clinical training is also of utmost importance for dental students, as it is during this stage that these students learn various manual and cognitive skills that prepare the students to enter the dental profession.⁸ It is the necessity of dental course that dental students cannot complete their course until they complete their work on set number of patients (patient quota) under the surveillance of their teachers, for which presence of sufficient number of patients in OPD is required.

According to historians, pandemics typically have two types of endings: the medical, which occurs when the incidence and death rates plummet, and the social, when the epidemic of fear about the disease wanes.⁹ Looking at the current scenario of the COVID-19 cases, it is likely that this pandemic will not end anytime soon.

Therefore availability of sufficient number of patients in this COVID-19 time is a new challenge to these learners. However, a sufficient amount of face-to-face practical hours with simulation models or clinical training on real patients is no longer feasible in COVID-19 pandemic time. Therefore real time problem solving exercises, multimedia workshops, webinars, and computer-based exams can be used as a teaching tool for making them experience the real clinical conditions. During this pandemic time various dental schools across the globe are focussing on virtual reality simulating patients using various technologies like 'haptic' etc. This technology can enable students experience

the real situation even in physical absence of patient.

The Virtual reality simulator system consists of a high-end computer workstation with appropriate software, a haptic device, and a stereoscopic computer monitor with stereo glasses. The computer renders three-dimensional (3D) graphics that can be viewed with the stereo glasses, and operates the haptic device that provides a realistic tactile sensation. Onscreen VR instruments can be manipulated on this monitor by operating the haptic device stylus for sensing life-like contact and interaction with teeth and associated anatomic structures.⁹

Psychological impact of COVID-19 pandemic on dental students

As COVID-19 is a novel pandemic, the psychological influence associated with this is also novel. Researchers all over the world are trying to assess psychological aspect of this pandemic, the magnitude of which would decide the psychological impact on students mind. This will also decide the kind of counselling needed for mental wellbeing of the students. It should be noted that during the COVID-19 crisis, dental students sometimes may undergo depression and be negatively influenced by the threat of being infected. Inevitably, dental students are likely to be anxious due to the high incidences of COVID-19 infection among medical personnel and their death.⁹ Therefore, during this time providing counselling services and psychological help for the dental students should also be an integral part of teaching modules.⁴

Conclusion:

In the time of COVID-19 pandemic face-to-face teaching activities in classroom setting does not seem to be feasible at present time and also in coming days according to the pace at which disease is affecting the community. The only prevention is the social

distancing which is restricting dental colleges to start the educational activities as before. Therefore the judicious use of digital platform for theoretical teaching is the tool which is being used. But for practical and clinical knowledge, use of virtual reality simulating patients using advanced technology should be encouraged.

It can therefore be suggested that VR simulation technology is a valuable resource to traditional dental training methods to be considered during the COVID-19 pandemic to enable distance learning.⁴ These technologies are vastly being used in developed countries so their application in developing country like India should also to be encouraged.

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