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CHANGING TRENDS IN ORAL MEDICINE AND RADIOLOGY – AN IMPACT OF COVID-19

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ABSTRACT

The COVID-19 pandemic has led to imposement of various regulations which in turn had its impact on the normal curriculum of oral medicine and radiology. Various restrictions imposed by the government on advice of health organisations lead to abrupt cessation of offline classes and clinical rotations to reduce the exposure of students. To overcome the drawbacks various alternative learning modalities were formulated including e-learning methods. These were later improvised into flipped class room system to ease out the learning process and make it effective one. Thus the e-learning, flipped education methods helped us effectively, efficiently to continue educating students and also helped students to gain knowledge uninterruptedly even in pandemic situations by reducing their direct exposure to patients. This article mainly focussed on the hardships faced by students and various strategies formulated to tackle it.

Keywords: COVID-19, e-learning, flipped education system, pandemic, students, oral medicine, radiology, clinical rotation, case discussions.

INTRODUCTION

On December 11, 2019 WHO alerted the world on spread of atypical pneumonia cases in Wuhan, China and cases were rising alarmingly. On January 7th, SARS COV-2 a new strain of corona virus was identified and on March 11, 2020 WHO declared it as a global pandemic. Since then government agencies have taken several measures to contain the spread of virus. While these efforts serve to flatten the curve of spread, they have also produced negative collateral effects on economy and education. Following this pandemic outbreak, various governments on advice of health organizations came up with set of rules to limit student's exposure to virus and ensure the safety of students by restricting or completely stopping student's participation in clinical rotations. Thus COVID-19 social distancing measures have promoted a revamping of current teaching methods in dental education. Thus the professors and students were grappling with changes made to consolidate the loses. The lack of personal communication between students and professors may cause burnout and drastically affect the students interest in learning, implementing various alternatives to overcome these barriers imposed by this pandemic became the most important need. Thus change is inevitable, a progress depends on our changes made according to situations. "The secret of change is to focus all of your energy not on fighting the old, but on building the new", this quote by Socrates is more apt for today's scenario.

MAINTANING AND IMPROVING HEALTH OF PATIENTS:

Covid-19 outbreak has created panic among society which is palpable and they were in confused state. Amidst the outbreak, only emergency procedures were carried out and in more instances patients were asked to postpone all their non-emergency dental procedures. Many patients feared to come to hospitals even in case of emergency. Considering these situations, the use of tele-medicine came into action, where virtual appointments were made. This ensures safety to both patient and doctor. Though it not as effective as face to face diagnosis methods, it is one of the ways to interact with patients in need while maintaining safety. Then emergency procedures were carried out with at most safety measures and under a safe and sterile environment. As students were not allowed to participate in any of these, so e-learning platforms were introduced and these are discussed latter. Integrating students with tele-health activities would help to maintain and improve patient's health, capabilities of healthcare teams and systems during and after pandemic, increased medical student's opportunities for experiential learning and professional identity formation. Several concrete student tele-health activities propose a curricular strategy and outthink opportunities to overcome key barriers to full alignment of tele-health and medical education. In same way diagnosis of patients were also made easy with help of digital radiographic methods.

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IMPACT OF COVID-19 ON STUDENTS EDUCATION AND CASE HANDLING

The dental colleges curriculum before covid-19 pandemic was mainly based on face to face interactive lectures, students attending clinical posting, case based discussions. Thus offline learning represent teaching in the pre-internet era. Although some forms of information technology have already been utilised to assist instruction, this method was effective as it involved live and direct interaction between the professors and students. The clinical rotations was also face to face which enabled students to gain more knowledge and experience with handling patients. The spread of covid-19 across the world has raised several concerns among the students and the government, hospital started to have a spike in infected patients. Students attending clinical postings were at increased risk of contracting the virus and thereby getting infected. Measures taken to contain the spread of virus forced dental colleges to close their campuses abruptly, which made students worried about their future [Jeffers K Nguyen *et al.,* 2020]. This has severe impact on their knowledge, experience and their way of handling patients. Simultaneously students found difficult to cope up with the accurate radiographic diagnosis. The end of the pandemic is unpredictable and this confinement due to COVID-19 has almost interrupted traditional education modalities. Thus it is important to continue educating students amidst the various hurdles imposed by pandemic. This

made us shift towards new ways of teaching and interacting. Pandemic has also shown to affect the core clinical rotation of students, problem solving, patient interaction, group learning sessions. In normal days, case based clinical discussions take place face to face in presence of patient with exchange of large clinical data sets between the learner and professor, so all diverse and key elements of clinical information are understood and used to enable the establishment of diagnosis, prognosis and appropriate treatment strategy [Martin N *et al.,* 2012]. During this time written and practical assessments are also affected making things difficult to evaluate the skills of students.

OVERCOMING THE BARRIERS- INNOVATION BORN IN ISOLATION

COVID-19 has made dental schools to close their campuses as at this crucial time the safety of the students and care for patients was of prime importance when compared to education. This made us to discover and adapt into new methods of learning and teaching. Persistence and adaptability during this time of challenge is more needed. Perspectives regarding change in face to face activities, reformation of clinical activities and social isolation result in transition towards e-learning, e-teaching process which is obviously necessary. For this various alternatives were formulated based on Kern's 6 step approach to medical curriculum development, this includes:

- Problem identification and general needs assessment.
- Targeted needs assessments.
- Goals and objectives.
- Educational strategies.
- Implementation.
- Evaluation and feedback. [Leisi Pei and Hongbin Wu, 2019]

Digital education is a slow growing process in academic dentistry, this mode of education system has helped us during the pandemic. A report submitted by United state department of education based on examination of comparative studies of online and face to face versions of same course from 1996-2008 concluded that online learning could produce outcomes equivalent or better than traditional methods. This serves as a nidus for the development and transformation into online methods. Various electronic platforms have been used as alternatives for face to face classrooms sessions. These includes zoom, Google meet, Google forms, Cisco webex, social Medias. In some instances educational electronic platforms presented by institutions as official alternatives were used. These alternatives to conventional learning's enable us to send educational materials, post videos, conduct discussions with effective interactions [Jeffers K Nguyen *et al.,* 2020]. Teleconferencing and internet based tutorials like webinars are also becoming increasingly popular now a days. This makes us witness a growth towards distance learning in the dental profession as it can be easily delivered by teacher, received by students with great convenience [Martin N *et al.,* 2012].

THE NEW CLINICAL ROTATION METHOD

In the beginning days of pandemic when the impact of virus was very severe, students weren't allowed to attend clinical rotations to limit their exposure to virus as there was an increased risk of community spread. Suspensions of clinical rotations and practice will lead to gradual reduction in student's clinical skills and it has two fold consequences, first decline in student skill which requires more time and intensive training upon return to normal classes and practice; second is difficulty in handling patients. This situation can't be left without any alternatives as attending patients increases students confidence, improves their diagnostic ability, shapes them into a better dentist in future where they can apply the learnt clinical knowledge and also helps to shape their knowledge, attitude, skills and professional behaviours and mainly helps to interact in better way with patients. So colleges are responsible for training their students leading to implementation of new curriculum to continue educational progress, this abruptly changed the existing methodology. Thus clinical rotations and direct patient interactions are important. In COVID times this situations can be simulated over the web using various available options like zoom, Google meet, Cisco. The learning environment in such conditions can also be improved by using uninterrupted superfast broadband connectivity [Martin N *et al.,* 2012]. Through virtual case discussions it is possible to collect all details about the patient even without contacting them. This process of e-learning seems to be beneficial to both students and patients. In this virtual case history sessions, students will participate virtually in patient examination, be a part of diagnosis, counseling patient and plan treatment procedures under the main guidance by professors. Even more advanced, in serious situations the entire diagnosis procedures by doctors was done virtually, called telemedicine. In this students were involved for observations. This combination of e-learning, tele-health will help to overcome the barriers imposed by pandemic regulations. At the same time similar difficulties were also encountered with radiology. Students faced difficult to diagnose based on radiology reports as they got very less chances to overcome their digital transition were made. Radiology which is already a developed department in technological side, poses as a big advantage as it enables easy access to students in this modified tele-education programme and also easy explanation by professors.

FLIPPED EDUCATION SYSTEM

As effective results were seen with the preventive measures some changes were made in the remote education system. In early times when situations were worse, all educational activities took place online. With decline in COVID-19 cases, few modifications were made to improve the effectiveness of the system. Here flipped education or blended system was introduced. This method involves attending patients face to face with at most safety precautions and switching back to online class, case discussion. Student centred integrated approach was accomplished by contemporary flipped classroom for better results by combining both e-learning and face to face instructions, this allows for a more adaptive and collaborative educational experience. Various studies conducted across the world shows that this Flipped Classroom strategy shows improved results when compared to traditional didactic teaching methods. Interestingly, radiology being a digital specialty now a days, lends itself exceedingly well to educational innovations in the form of e learning resources as mentioned here. This form of blended learning allows both professors and students to flex according to the needs of the institutions and current situations and ensure to provide continuous education to students. Like blended learning, use of augmented reality, virtual reality to simulate clinical cases can also be implemented. Use of simulators span a spectrum of sophistication from a single reproductions of head and neck region to diseases ranging up to rare cases. Such methods provides various advantages- provides effective feedback, repetitive practice, multiple learning strategies, capture clinical variation, controlled learning environment, individualized learning/mastery, team training.

E-LEARNING METHODS- A BOON OR BANE

In the wake of COVID-19 pandemic, the replacement of in person face to face classes and clinical rotations with online mode became absolutely necessary. These measures may reduce the risk of

exposure to virus but post substantial risk for learning experience and development of medical students. Various researchers have demonstrated that well designed online learning can lead to student's enhanced motivation, involvement and improved learning. Students also find e-learning enjoyable and useful in the difficult situation and have given positive outcome amidst initial technical difficulties. One of the greatest advantages of e-learning and telemedicine is the ability to have greater educational impact with less instructional time essentially "doing more with less". Also it has long term benefits of compiling the educational materials created by the professors and allows more efficient use of all resources in future [Lily M *et al.,* 2014]. Various other advantages includes flexibility offered to both students and professors, this platform enables them to frame their own schedule based on the needs, enhanced realistic visualization, documentation of learner behaviour and outcomes, safe controlled environments that eliminate risk to patients, authentic contexts for learning and assessment, instruction tailored to individual or group needs, repetition and deliberate practice, enhance perceptual variation, learner control of the educational experience and improve skill coordination, standardization of instruction and assessment. When it comes to radiology, use of such blended learning methods offer tremendous knowledge despite the pandemic and their continued use may take radiology education to higher standards within the course duration [Lily M *et al.,* 2014]. Though this new method has various advantages, several challenges faced must be addressed. In some situations, lack of personal communication between professor and students may lead to burnout in students, this in turn affects their interests on long run. This may lead to lack of concentration, lethargy in upcoming classes. Technology can enable direct observation via distance perception either with preceptor, via a video conference. This helps to supervise the student's ability at such situations. Most important drawback is the initial difficulty faced by professors as they are used to traditional millennial method of teaching. Besides this other factors like lack of infrastructure, technology, student engagement based resources also affect the outcome of e-learning modalities. So remote/digital mode of learning is a transient replacement of traditional face to face learning and clinical rotations which serves as the corner stone in medical education. This digital mode of learning can enable students to develop competencies, achieve valuable workplace experience provided they use their time more efficiently and effectively. Thus it is a savior at such tough situations.

CONCLUSION

"Students are the future and they should learn absolutely everything to be the best even at tough times" and at this era of COVID-19 shift to tele-health and e-learning methods in oral medicine and radiology has been a good solution. This sudden transition has imparted several challenges. At this difficult times a mentored learning experience through online modes may increase the confidence of students. Although tele-health and e-learning is not the complete solution in oral medicine, COVID-19 has brought this alternative mode of healthcare and teaching to forefront and has made us to explore and utilize it. This new transformation will serve as a tremendous investment in our student's future. "Tell me I will forget, show me I may remember, involve me and I will understand". Thus traditional mode of education is the permanent cornerstone and this transient e-learning methods have benefited us a lot in oral medicine and radiology at tough COVID times.

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