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ORIGINAL ARTICLE

Challenges Faced in Teaching and Learning during Clinical Years of Dentistry amidst the Covid-19 Pandemic

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ABSTRACT

Background: COVID-19 has had unprecedented effects in all disciplines of life, across the world. Nationwide shutdowns and uncertainty of reopening educational institutes have raised concerns about the smooth continuity of the education system. Sudden and abrupt shifts to online learning poses significant challenges for dental and medical schools everywhere.
Aim: This cross-sectional study explores the challenges faces by students and faculty of Undergraduate Dentistry in clinical years.
Methods: This cross-sectional study was conducted from 6th April to 5th May 2020. Two structured questionnaires (for faculty and third, final year BDS students respectively) were designed and validated. Data analysis was performed using SPSS 21, descriptive statistics were applied and frequencies were calculated for various responses
Results : Thirty-three (94.3%) faculty members and 161 (95.3%) students expressed that COVID-19 was disrupting the teaching and learning of the clinical years of dentistry, while 16 (45.7%) said clinical teaching had been disturbed more than knowledge-based teaching. According to the students and faculty members, applications like WhatsApp and Zoom were inadequate for developing clinical skills.
Conclusion: Clinical teaching and learning of Dentistry have been considerably disrupted by the Corona Virus. Social media applications such as WhatsApp and Zoom are the most commonly used mode for knowledge transfer but are not adequate platforms for clinical skills needed to gain competence in clinical dentistry. The ability of teaching and accessing mandatory clinical skills using online forums is a major concern and needs to be addressed as soon as possible.
Keywords: E-learning, COVID-19 and dental teaching, social media teaching

INTRODUCTION

The first case of COVID-19 was reported in China on 18th December 2019 and was diagnosed as pneumonia of unknown etiology followed by more patients with similar presentations[1]. The epidemiology of these patients was linked to the wet animal market in Wuhan, Hubei Province, China. Within a few weeks, COVID-19 crossed multiple geographic boundaries[2]. The World Health Organization international health regulation emergency committee declared the disease a public health emergency of international concern on 30th January 2020. It was declared as a worldwide pandemic on 11th March 2020[3]. Human to human transmission of COVID-19 is believed to occur through respiratory fluids such as mucus, coughing and sneezing, touching or shaking hands with an infected person, or making contact with a surface that has the virus and then touching the face, nose or eyes[4,5]. It is a highly contagious disease and the mortality rate varies from 0.8 to 4.3% according to the early studies[6]. This lead to worldwide adaptation of social distancing, self-quarantine, imposing a curfew, lockdowns, and restrictions on gatherings including, religious and social events and shut down of schools, colleges, and universities for an undefined period as uncertainty prevails[7,8]. The first case of COVID-19 was confirmed on 26th February 2020 in Pakistan. All schools, colleges, and universities were closed on 13th March 2020 to avoid the rapid spread of this virus[9].

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Dental colleges have suspended all patient interactions of undergraduate students and medical education has been shifted to online platforms using social media, WhatsApp groups, virtual small group discussions, recorded lectures, or online streams for learning and assessment.[10,11] Although the shift from in-person teaching to online teaching has provided an opportunity to continue educational activities in disasters, [12] it has demerits, including loss of collaborative experience, lack of procedural skills learning and opportunity for personal development, which can have determinantal effects on clinical skills in particular. Faculty members emphasize in-person classroom teaching to be irreplaceable due to the lack of real-time feedback between teachers and students in online forums.

Dental students require acquiring and demonstrating various clinical skills and competencies in departmental rotations during their clinical years. A significant number of dental college students are either in the process of or undertaking assessments that require pre-clinical or clinical exposure, cancellation of laboratory/pre-clinical and clinical departmental rotations can have deleterious effects on these students. The ability of teaching and accessing mandatory clinical skills using online forums is a major concern and needs to be evaluated and addressed. Although the use of technology to resolve challenges

posed by COVID-19 is effective to a certain degree, but dental students need to acquire and demonstrate the same set of skills as they would have done previously[13,14].

The purpose of our study was to explore the disruptions caused due to online learning in the clinical side of undergraduate dentistry, an area which has been left relatively unexplored during this time[13]; by taking into account both sides of the coin-i.e. the teachers and the students.

MATERIAL AND METHODS

This cross-sectional study was conducted in the University College of Medicine and Dentistry University of Lahore from 6th April to 5th May 2020 after approval from institutional Ethical Committee. In the lockdown period, mode of teaching was through social media applications like WhatsApp. Faculty members were directed to add audio in their Powerpoint presentations for clarity of topic and sent to the WhatsApp group of third and final year classes of BDS. This WhatsApp learning and teaching remained active for two weeks when the University started the use of synchronous teaching through Zoom with which faculty members became familiar in three weeks.

After approval of the Ethical Review Board, two questionnaires (one for faculty and other for students) were designed and sent to three medical educationists for their construct validity. A few items were omitted and three items were reconstructed after their feedback. The final draft of the questionnaires was again sent for revalidation. A pilot test of the questionnaires was carried out and they were then distributed via Google form links sent to the students of third and final year BDS and their faculty members on their WhatsApp groups on 17th April 2020. Individual reminders to forty-five faculty members were sent again on 20th April 2020. Out of 45 faculty members, only 35 responded and 169 students responded out of 180.

Table 1: Designation of faculty members

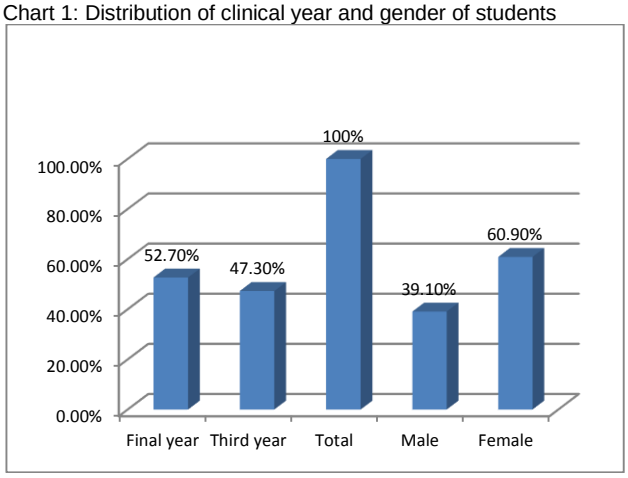
Designation	Frequency	%age
Demonstrator	10	28.6
Senior demonstrator	9	25.7
Assistant Professor	12	34.3
Associate Professor	3	8.6
Professor	1	2.9
Total	35	100

Table 1 Teaching experience of faculty members

Experience of teaching	Frequency	%age
Less than 1 year	8	22.9
1 to 5 years	16	45.7
5 to 10 years	5	14.3
More than 10 years	6	17.1
Total	35	100

A total of thirty-five faculty members from the clinical disciplines responded. Out of thirty-five, 16(45.7%) were females and 19 (54.3%) were males. The minimum and maximum ages of the faculty members were 27 and 47 years, respectively, with the mean age of 34.85±5.342 SD years. The designation of faculty members was from demonstrator to professor level (table 1). A total of 169 students participated in this study, 103(60.9%) were females and 66 (39.1%) were males. Eighty-nine students were from the final year and 80 students were from third years BDS (table 3). The minimum and maximum ages of the students were 19 and 26 years, respectively, with the mean age of 21.86±1.149SD year.

Chart 1: Distribution of clinical year and gender of students



The percentage of students who said that COVID-19 was affecting their learning was 95.3%. Seventy-nine (46.7%) students said only clinical component of their studies was affecting more, on the other hand, 90 (53.3%) students said both clinical and nonclinical learning were effected in this pandemic. Due to the lockdown in the country, all institutes were closed and many institutes started online teaching classes through different virtual learning platforms.

We, at the University of Lahore, made the WhatsApp groups of the classes and shared the PowerPoint presentations with embedded voice recording of lectures to make the concepts clear. The lectures and learning resources were also shared through Emails to the students. After two weeks, faculty members started taking lectures on real-time video-based application Zoom.

One hundred and thirty (76.9%) students said they were taught by the Zoom Application during this pandemic, while 34 (20.1%) students said they were taught by using the combination of emails and WhatsApp groups.

Most of the students said that learning via WhatsApp was not adequate for academic (knowledge base) (76.3%) and clinical (skill-based) learning (95.9%). Lack of hands-on practice, live demonstration, and pre-clinical lab work were the main reasons (80.5%) why WhatsApp was not a sufficient modality to learn clinical skills

Ninety-nine (58.6%) students did not find the WhatsApp application as an easy platform to ask questions in case they needed clarity. 43 (25.4%) students expressed reservations that they did not want to become prominent by asking the questions in the WhatsApp group.

Other reasons were; 23 (13.6%) students said they lacked the interest through WhatsApp learning, 48 (28.4%) students found it hard to ask questions in chat threads, 8 (4.7%) students said lack of responses from teachers was the reason.

As compared to Whatsapp, Zoom was the preferred mode of learning by students. One hundred and two (60.4%) students said real-time bases application like

Zoom was not adequate for academic learning. Reasons being, low net connectivity at home (44.4%), followed by the inadequate training for attending zoom meetings (24.3%), trouble in getting logged in (7.1%), outdated gadgets to use Zoom (11.8%).

Other reasons mentioned by the students were; Zoom did not create a real sense of learning environment, Moodle, through which they were connecting to lectures on Zoom, was not user friendly, and lack of interest due to connectivity issues.

One hundred and fifty-seven (92.9%) students said that Zoom was not adequate for clinical skills learning and the reasons were; lack of hand-on practice (77.5%), lack of pre-clinical lab work (14.2%), and combination of both (8.3%).

Regarding the faculty, Thirty-three faculty members (94.3%) said that COVID-19 was affecting their teaching to the third and final years of dentistry. (45.7%) said clinical teaching was affected more.

During the lockdown period, 40% of faculty was teaching through real-time base applications like Zoom and 51.4% was teaching through the combination of WhatsApp and Zoom. Only 5.7% of faculty was teaching through WhatsApp only. Thirty-two faculty members (91.4%) said that knowledge-based teaching was not adequate through the WhatsApp application.

Among the reasons why Whatsapp was not adequate for teaching were; lack of use of body language (14.3%), the lengthy time required for audio recording in PowerPoint presentations (8.6%), at home it was difficult to control the background noise (2.9%), conceptualizing was quite difficult (2.9%), and they were uncomfortable in recording voice messages (2.9%).

Twenty faculty members (57.1%) said that said real-time based application like Zoom was not adequate for academic teaching. The reasons were; trouble in getting logged in (17.1%), lack of high-speed internet at home (11.4%), inadequate training for attending the Zoom meetings (14.3%), outdated gadgets to use Zoom (5.7%), and combination of all these reasons (37.1%). Other reasons mentioned by faculty members were; interaction with students was difficult and time-consuming (2.9%), not able to have facial responses from students as most of them kept their cameras switched off (2.9%), and inability to control or know what was happening on another side of the screen (2.9%).

Thirty-three (94.3%) faculty member said real-time based applications like Zoom were not adequate for teaching the clinical skills to students. The reasons were lack of hands-on practice (25.7%), lack of pre-clinical or laboratory works (2.9%), and a combination of these both reasons (71.4%).

DISCUSSION

Due to the lockdown and closing of the medical schools, there is a paradigm shift to online learning and teaching. The clerkship in different medical and dental departments is not possible due to a shortage of screening kits for COVID-19, cancellation of all elective surgical cases, lack of personal protective equipment[14]. In Pakistan, more than 48000 people have been infected with the coronavirus till the date 21st May 2020. This unprecedented pandemic has affected health care professionals physically, emotionally, and mentally. Those in academia are more occupied in preparing and conducting the online classes jeopardizing the work-life balance[15].

Due to fewer recourses available, inadequate health care strategies, and fear among health care providers, many health care practices are closed, creating a shortage of health care providers. There is a need for the engagement of students as a workforce. Some schools are considering early graduation to manage the shortage of health care providers so that the students can serve the public in this need of the hour[16]. Clinicians have started the telemedicine to avoid the risks of infections[17,18]. Those involved in academia are using different online tools for sharing the reading materials and synchronous and asynchronous methods of learning and teaching[19].

Social media applications like WhatsApp was already being used for medical teaching[20], but the real-time based application like Zoom has gained popularity in this lockdown period.

Our study was incongruence in many others showing that real-time teaching, in a structured classroom like environment was much better than haphazard learning via social media sites[20].

Third and Final year in dentistry are the clinical years in which students learn the essential core skills by performing the procedures with patients interactions like teeth fillings, extractions of teeth, and construction of dentures. Lack of teaching and assessment of these procedural skills may compromise the quality of graduating dental surgeons. This was the main concern echoed by students and faculty in our study and other studies worldwide[20].

Different platforms are suggested for online teaching and assessment like learning management systems (LMS), MOODLE. Multiple platforms can be combined to engage the students and enhance their interest in better learning and teaching[21].

Limitation of study: This study was conducted in one dental college of Lahore, and the sample size was small. Further, studies are recommended to find what strategies medical and dental colleges have adopted to overcome the deficiency of teaching clinical skills in multiple institutions with a larger sample size.

Another limitation is that this is a purely structured questionnaire meant as a preliminary analysis, refinement can be done by a more in-depth qualitative study.

CONCLUSION

COVID-19 had significant and perhaps everlasting effects on the learning and teaching of the clinical years of dentistry. A paradigm shift to online learning and teaching will revolutionize medical education worldwide. However, it is challenging to teach the clinical skills to the students due to the social distancing and nature of this pandemic, innovation needs to be done in asynchronous and synchronous teaching and learning, possibly by use of simulators, virtual patients and Artificial intelligence to ensure that students do not lack in clinical competencies.

Conflict of interest: Nil

Contribution of authors: AL: Data collection, idea generation, write up, **KA:** Helped in discussion writing, final draf review, **RAK:** Helped in designing the study, final critical review

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