

Confusion is the first step towards understanding: Fixing the problems of E-learning in COVID-19 pandemic

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Abstract

Introduction: The COVID-19 pandemic forced institutions worldwide to adopt online learning, which opened a new era of challenges. Our research was designed to explore the effect of the pandemic on teaching and learning and identify the solutions to the problems based on participants' perspectives.

Materials and Methods: A qualitative study of the phenomenological design was conducted at a medical institute in Pakistan. The participants were selected using the purposive sampling technique. Semi-structured interviews were done which were later audio-recorded, transcribed, and subjected to manual thematic analysis. Credibility was ensured by using multiple data collection sources.

Results: The 20 participants selected as interviewees were faculty with more than 5 years teaching experience in the medical institute and had gone through online teaching and learning during COVID-19 pandemic. The thematic analyses of the data generated six themes which were: 1. "I see what you mean"; Re-exploration of educational psychology, 2. Reorganization of curriculum, 3. Mentoring and coaching, 4. Technology: as ubiquitous as oxygen, 5. Constructive feedback: a stimulus in pearl formation and 6. Turn the tables: fixing the problem.

Conclusion: Online education has emerged as an important mechanism in delivering medical education to undergraduate medical students. Instead of shying away, efforts are needed to restructure the curricula,

incorporating various online innovative teaching, and learning tools that are at par with the changing global demands of medical education.

Keywords: E-learning, COVID-19, Challenges.

Introduction

A severe contagious outbreak because of SARS-CoV-2 was first identified in 2019. The disease COVID-19 was declared a global pandemic on 11 March 2020 (1,2). Coronavirus was initially identified in China in Wuhan city. This causative agent belongs to the family Coronaviridae and is a single-stranded RNA virus (3). Based on genetic similarities between SARS-CoV-2 and COVID-19, this virus was named "severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)" (4). Traditionally medical education was believed to be supported through various interactive activities including face-to-face interactions of students, peers and teachers and work-integrated learning (WIL) (5). Mainly student learning was used to take place in lecture halls, medical wards, operation theatres, practitioners' clinics, and the community (6). From the literature, it is evident that student-student and student-tutor interactions can lead to a conducive learning environment through observation and experiential learning (7). However, the Covid-19 pandemic has badly disrupted the well-established, traditional structure of medical education. The development of both synchronous and asynchronous distant education has been accelerated by the new limitations of physical presence in the Covid-19 pandemic. At the same time, this dreadful crisis has seriously affected the lives of medical students, their psychological well-being, and their academic trajectories (8). Obstacles to promoting medical education during the pandemic are the extremely contagious nature of the virus, social distancing, paradigm shift from face-to-face to e-learning, lack of training of faculty and students for different e-learning strategies and technical and socio-economic challenges (9).

This paper conceptualizes the development of improved and innovative repertoires of instructional skills, techniques and strategies of teaching and learning in the Covid-19 pandemic. It will help the faculty members enhance their intellectual capacities to unveil the new dimensions of online teaching and learning to overcome the obstacles and challenges in medical education.

Documenting these experiences and their proposed solutions will theoretically and practically add new

dimensions to the body of knowledge on online teaching and learning strategies.

Materials and Methods

A Qualitative study of the phenomenological design was carried out at FUMC for a duration of six months (July 2021-Jan 2022) after taking ethical approval from the ethical committee.

Ref No535/RC/FFH/RWP. In a qualitative study in-depth exploration is required and, therefore, the sample size can range from 1 to 40 (10). The sampling technique used was the purposeful sampling technique. Phenomenological studies often involve an in-depth exploration of the experiences of a relatively small number of individuals. This study design was the most suitable as it was related to the exploration of factors impacting the online teaching and learning process of faculty by understanding their lived experiences in the COVID-19 pandemic (10). A total of 20 faculty members including Senior lecturers, Assistant professors, Associate Professors, and Professors with greater than 5 years of teaching experience were included in the study. The lecturers and demonstrators were excluded from the study. After taking informed consent from all participants, semi-structured interviews of 30 min duration (audio-recordings) were taken from the faculty members. Semi-structured interviews based on a self-developed questionnaire comprising 7 open-ended questions. It was constructed following the protocol presented in the "AMEE guide 87: developing questionnaire" to ensure internal validity and reliability (10) and was validated by four medical educationists for expert validation. Data sources used were observation notes taken by the researcher and audio recordings of the semi-structured interviews. A reflective journal was maintained by the researcher.

Quality assurance

Quality assurance was maintained by triangulation and member checking. Data triangulation was ensured by taking the details regarding time, place, persons and schedules and participant's names, designation, departments, institutions, telephone numbers and e-mail addresses for further communication and any required confirmation Peer-assisted data triangulation was done by a colleague with a background in medical

education by analysing all data collected. Through this cross-verification, all shortfalls and discrepancies were identified and corrected. Dependability was ensured by audio tapings which were sent to the fellow associate after debriefing.

Data Analysis

All audio-recorded interviews were analysed by careful listening and transcription was done manually on Microsoft word. Main aim of the analysis was to explore the beliefs and constructs of respondents through "phenomenological analysis" of transcribed data. Thematic analysis was done using six-step approaches to qualitative data analysis. After reading transcripts, the related segment of texts was coded line-by-line. There were 52 open codes. These were interlinked and reduced to 11 axial codes which were finally reduced to six themes.

Results

Of the 20 participants, there were 14 (70%) females and 6 (30%) males. The overall mean age was 30+/-1.89 years. After thematic analyses of the semi-structured interviews, six themes were generated: "I see what you mean", re-exploration of educational psychology, reorganization of curriculum, mentoring and coaching, technology: as ubiquities as oxygen, constructive feedback: a stimulus in pearl formation and turn the tables: fixing the problem.

Theme 1: "I see what you mean", Re-exploration of educational psychology:

The COVID-19 pandemic has drastically impacted traditional teaching and learning opportunities which were based on involving in-person interaction with teachers, peers, and the patients. Different theories of educational psychology were practically effective in face-to-face learning. But the changed online format negatively impacted the intrinsic motivation of students as well as the teachers despite applying different learning theories into practice. The major causes identified were lack of in-person interaction and lack of effective use of engagement techniques during lectures.

Respondent 2: "Delivering an online lecture was just like you are talking to a blank screen".

Respondent 6: "Online lectures were very boring like you are talking to the walls. We are giving just for the sake of giving. We are totally unaware of students' activities, responses and understanding. So, it should be better video recorded."

Few participants highlighted the importance of body language in the learning process. According to them,

human interaction is important through which they can put the unconscious minds of their students to work for better learning in a conscious way to direct the flow of effective teaching and group dynamic maintenance.

Respondents 4 and 8: "We usually come to know from students' different behaviours and body gestures during the class about their interest and understanding of the topic. But in online teaching, nothing is visible therefore we don't have any idea about students' interests and perceptions".

Theme 2: Reorganization of curriculum

In the Covid -19 pandemic, a big transition has taken place from conventional in-person to online education and it's not easy to engage students and keep them attentive during online lectures. According to the participants, the hour needs to identify the impact of this transition and adapt teaching and learning strategies that help students contextualize their learning in clinical practice.

Respondent 2: "We should introduce interactive modes of teaching and learning, maybe more online SGDs and PBLs instead of traditional lectures"

Respondent 8: "There should be more formative assessment and also students should participate in curriculum redesigning"

Participants believed that medical educators should also involve students to reorganize the curriculum to adapt to innovative teaching strategies with a focus on active online learning through small group discussion (SGD), and problem-based learning (PBL). There should be more formative assessment methods in the curriculum to keep students engaged and attentive during the online classes.

Theme 3: Mentoring and coaching

The significance of mentoring and coaching in medical education has been widely acknowledged. According to participants there is increased demand for mentoring and coaching of faculty during the pandemic for online teaching strategies. Furthermore, participants were of the opinion that faculty development workshops designed in a new online format should be done at frequent intervals for the successful delivery of content.

Respondent15: "We were not trained for online teaching techniques, and I think students should also need training....in the context of online learning and teaching...."

Respondent 13: "I think training of faculty is a must on frequent intervals to get adapted to this new online format"

Theme 4: Technology: as ubiquities as oxygen

This unique pandemic experience resulting in online teaching and learning led to uncertainty and stress in both students and teachers and required them to

adjust to new and unforeseen challenges. The participants concluded that lack of internet facilities, non-availability of IT staff, and paucity of awareness and training about different techniques were the main obstacles to effective adaptability of E-learning.

Respondent 17: *"frequent internet disruptions and non-availability of the internet was the most important impediment"*

Theme 5: Constructive feedback: a stimulus in pearl formation

Pearl is just an invaluable raw material at the beginning of its formation, but certain natural irritants work to transform it into a precious pearl. Similarly, timely feedback from the students to faculty is very important for polishing their teaching skills and adapting effective teaching strategies. Many of the participants thought that it is a must to know and understand the impact of all initiatives on students' understanding and engagement, learning and behaviours. And it can be best achieved by timely feedback from students.

Respondent 16: *"lack of feedback from students is limiting the improvisation of teaching and learning strategies"*

Theme 6: Turn the table: Fixing the problems

The participants suggested various solutions to deal with the dilemma of the transition shift from face to face to online teaching and learning. It's time to re-explore the educational learning theories and various constructivist schemas to develop innovative curricula, teaching and learning strategies and students' assessment.

Respondent12: *"we should redesign curriculum according to online teaching, cut down lectures may be content alteration to make it more interactive"*.

The under-resourced countries must weigh for advantages, disadvantages, feasibility, benefits, shortcomings, and modifiable drivers of the economic impact of the different types of innovative initiatives when they plan for curriculum reorganization.

Faculty training and grooming were also recommended for online tutorials, asynchronous activities in a moderated discussion, E-learning in simulation sessions, formative quizzes and other teacher-directed or self-directed learning activities.

Respondent 18: *"we want to learn more about new techniques in online teaching and learning and how we can use them effectively"*

Respondent19: *"We should be provided with effective tools and guidance for various modes of online teaching and learning"*

For guidance, the participants gave an example of the 'Flipped classroom', a blended type of learning mode

offering effective interaction between medical students and faculty members.

Respondent 18: *"Most of the time I feel like I am talking to blank walls and don't know are students attentive and what they are learning"*

Prompt generation of feedback forms after the online sessions is symbiotic and serves as a bridge between the students and teachers and must be made possible.

Discussion

Medical education is an extremely dynamic process that should be refined in this COVID-19 pandemic. The lack of innovative teaching and learning strategies in the context of online education delivery makes medical curricula inadequate for a significant stride towards a bright future (11). It is evident from the literature that intrinsic motivation is the most important factor affecting adult learning. It is the heart of an individual's personal and professional development. Increased self-esteem, self-confidence, autonomy, high self-efficacy, and relatedness lead to the increased intrinsic motivation of teachers thus enhancing their competence (12). Participants of this study believe that online education resulted in a lack of intrinsic motivation to learn among students and faculty. It was like a barrier to their energized, uninterrupted, and sustained behavioural interactions. Therefore, there is a dire need for Health professional educators to re-explore the basics of educational psychology and design innovative strategies to enlighten their humanistic, behavioural, cognitive, and social perspectives through e-learning. According to Kenny, students' and teachers' behaviour often leads to understanding and discussing the opportunities to identify thoughts and feelings associated with those events. The significance of non-verbal communication was first highlighted by Psychologist Albert Mehrabian in 1970 when he described the rule of "7/38/55" i.e., 38% of messages are transferred through tone of voice & 55% are transferred through facial expression (Ickes, 2014) and 7% of message about feelings and attitudes are transferred through words we speak (12). Participants believed that during online education lack of observation of students' behaviour was the obstacle to understanding their learning leading to a lack of intrinsic motivation of teachers. A study conducted by Lee et al also showed that medical students are poorly motivated to get engage in online learning, and some of them may encounter communication challenges (13).

Participants of this study are of the opinion that it is the need of the hour to reorganize the medical curriculum replacing formal lectures with more interactive teaching strategies e.g. PBLs and small group discussions. In a study conducted by Ross DA, it was recommended that assignments and live online video lectures and Zoom conferences provided students with opportunities for continuous learning in the Covid -19 pandemic (14). According to the study conducted by McCullough LB most, proposed methods are interactive discussions, scheduled live online video lectures and several different programs designed for self-study for medical students. However, in this study, it has been mentioned that this curriculum reorganization should be conducted according to ethical frameworks based on the professional virtues of courage and self-sacrifice (15). Our participants are of the opinion that formative assessment should be encouraged during online education. Tapper J highlighted useful innovative assessment techniques keeping in view the availability of specific technical requirements including good internet connections, microphones, cameras, and highly featured speakers to prevent any distractions and bias. Ethical challenges risk of leaked questions should be taken care of in terms of its implementation (16).

Participants suggested that there should be strict implementation of faculty development approaches, coaching and mentoring with special emphasis on the use of social media and technology for online teaching and learning. It is evident from the literature that to enhance the faculty members' teaching skills and enlighten their career advancements it is of utmost importance to invest in innovative faculty development approaches (17,18). Morahan PS also mentioned in their study that to acquaint untrained faculty members with the basic logistics of social media, common and simple platforms, such as Twitter and Facebook should be used for faculty development. Faculty inter-professional connections and community building can be promoted by one-one contact. (19). There is a dire need to revise present professionalism guidelines for professional use of social media to design policies governing intradepartmental and interdepartmental faculty online activity (20-22). Mecum-Mentor, a well-established mentoring program, can be adapted to promote medical faculty mentoring and coaching (23). Participants wanted to learn different E-learning techniques and believed that lack of training and availability of resources is a big impediment to successful learning. Keeping in view

the paradigm shift to e-learning from face-to-face learning, technological innovations like web-based learning, (24) mobile-enhanced learning, (25) and computer-assisted learning should be integrated into routine medical education practice (26). Education through social media can disseminate information asynchronously through quick and easy-to-use formats (27). Adaptive learning platforms (ALPs) are emerging technologies that could be proved to be truly revolutionary if used intelligently. These interfaces adapt major functional characteristics according to learners' needs, capture user data, and analyse patterns to guide learners to resources that target their learning gaps. ALPs consist of formative assessment tools such as flashcards or multiple-choice questions. ALPs make learning more efficient by targeting learner needs and reducing the cognitive load (28).

Conclusion

It is the time of change. Need of the hour is curriculum reorganization, implementing innovative approaches for formal and informal faculty development, and implementing methodologies for coaching and mentoring faculty. Medical educators should adopt the scholarly approach in inculcating e-learning techniques and provision of a technology-friendly environment. Intime feedback from students should be encouraged and faculty should be trained and encouraged to practice reflection and self-evaluation.

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