COMMENTARY

COVID-19 as a catalyst for change: Challenges and innovations in medical education

Anila Jaleel[1], Ghulam Farid[2]

Department of Medical Education, University of Health Sciences, Lahore, Pakistan[1]
Department of Information Management, University of the Punjab, Lahore, Pakistan[2]

This study details the challenges faced by medical schools in Pakistan during the pandemic, including training faculty in online teaching and assessment, ensuring practical and clinical training, and proctoring online assessments. Opportunities that arise from it include the use of digital technology platforms such as LMS, webinars, Google Meet, and SurveyMonkey, as well as their integration into the curriculum. The use of virtual training tools and simulations has become an integral part of undergraduate clinical training. The study suggests investing in digital technology and artificial intelligence, faculty training, the introduction of calculus and physics, and curricular flexibility and diversity to prepare doctors for 21st-century needs.

Key Words: Digital Technology, Post-Pandemic, Challenges, Opportunities

INTRODUCTION

The COVID-19 pandemic has transformed medical education globally.[1] The sudden onset of the pandemic in 2019 posed challenges to medical education but also created opportunities for future educational strategies. COVID-19 cases began emerging in Pakistan in March 2020, which created an emergency in the medical fraternity regarding how to continue training medical students when it was unknown how long the crisis would last. A series of meetings among the principal, the medical education department, and the faculty led to the planning of a robust program. A needs assessment was conducted, a feasibility report was generated, and different software was purchased, including Webinar Hours, Zoom, and Google platforms. The transition from a lecture-based traditional curriculum to the use of online digital platforms required extensive training and effort in countries like Pakistan, where the availability of laptops and computers for all students and stable internet connectivity were major challenges.[2]

CHALLENGES

The challenge was to train faculty to deliver information using this software. A series of faculty development workshops were conducted every two weeks to train most of the faculty in synchronous and asynchronous teaching methodologies. In the first phase, senior faculty members, ranging from Professors to Assistant Professors, received training in delivering content via webinars and Google Meet, conducting assessments through the Learning Management System (LMS), and using proctoring software. In the subsequent phase, training was extended to lecturers and demonstrators. This training program lasted six months, with ongoing troubleshooting support provided by the Department of Medical Education. The junior faculty had greater technological awareness than the senior faculty. Reverse mentoring was successful during this period. Similarly, emergency measures were implemented, including the transition to online planners, lectures, tutorials, and practical sessions. Among other challenges, practical performance and assessment were the main areas to be addressed, but they appeared to be compromised during this phase. The clinical bedside training of students and practical sessions were the main challenges. These were addressed by showing videos of the competency to be performed, but they could not compensate for the students' own practical performance. Cheating and assignment copying were the primary obstacles during assessments, necessitating stronger proctoring. Learning management system was used to assess MCQs and SEQs. However, faculty were also trained in open-book assessments. Another obstacle that was overcome was the admission of a new incoming class.

The admissions test was online, but the medical school required interviews. Mini medical interview scenarios were developed by the faculty to assess empathy, communication skills, altruism, and conscientiousness, and were approved by the medical education department. Faculty were trained online to conduct interviews and mark schemes. The MMI was administered online by two faculty members for each candidate, and a merit list was generated.

Various studies have documented mixed perceptions among students and faculty regarding medical education during this challenging period.[3,4] These include lack of internet access to students, especially those living in rural areas; questionable academic integrity and standardization of assessment; lack of face-to-face interaction between students and teachers; moreover, the mental health status of students, seeing their loved ones dying every other day. However, several opportunities were created during this time to enhance the academic environment and teaching learning strategies in medical education (Table 1).

Opportunities and innovations in medical education post-pandemic

The analysis of medical education during lockdown revealed various opportunities that enabled a post-pandemic transformation. The accelerated digital transformation not only trained faculty to use this software but also integrated digital tools into medical education. It also catalysed the use of virtual simulation and virtual reality as valuable tools for training students' clinical skills. It provided an opportunity to address the needs of diverse learners by offering flexibility and allowing students to learn at their own pace through online platforms such as LMS.[5] LMS enabled the creation of quizzes, attendance tracking, grading, providing feedback, and securing content for future reference.[6] The students were able to access global resources through online networking, attending conferences and seminars, and tapping into other learning resources online. Public health, infection control, and crisis management were incorporated into most medical curricula post-pandemic to prepare future health professionals to address these emergencies (Table 1). The pandemic enabled the faculty to adopt innovative assessment methodologies, such as open-book and competency-based assessments.[5,6]

Before the pandemic, most medical schools in Pakistan primarily followed discipline-based curricula, with lectures serving as the dominant method of information delivery. The pandemic highlighted the need for a modular curriculum emphasizing small-group teaching facilitated by digital technology. Post-pandemic, the University of Health Sciences, which oversees 48 affiliated medical colleges in Punjab, Pakistan, transitioned from a discipline-based to a spiral curriculum. This transformation incorporated innovative teaching strategies, including flipped classrooms, problem-based learning, and team-based learning, along with a significant increase in the use of Learning Management Systems.

Table 1: Challenges and Opportunities in Medical Education Post-Pandemic

Need	Challenges	Opportunities
Educational strategies transformation due to COVID 19 Pandemic	• Digital technology access • Training in technology • Procuring in assessments • Practical and bedside training • Mental health issues	• Accelerated Digital transformation • Virtual simulations and tools for practical and clinical skills training • Global networking • Transformation of medical curricula

CONCLUSION

The challenges posed by the COVID-19 pandemic created an opportunity for students and faculty in developing countries such as Pakistan to adopt innovative digital tools for teaching and assessment, aligning with contemporary demands.

Recommendations

Medical schools should adopt strategic measures to capitalize on the opportunities highlighted in the post-pandemic period. They should invest in technologies such as online platforms and artificial intelligence. Faculty should be equipped and trained to use digital technologies to deliver medical education effectively. Faculty development workshops should place greater emphasis on digital training. Curricula should be modified to induce flexibility and diversity in digital skills and competencies. There is a need to include calculus, physics, and knowledge of algorithm development in medical curricula to prepare future doctors for 21st-century skills. Ethical implications of the use of digital technologies and methods to address them should also be part of curricula. Lessons learned

during the pandemic will definitely shape the strategies in medical education.

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Corresponding Author:
Professor Dr Anila Jaleel
Department of Medical Education, University of Health Sciences, Lahore, Pakistan.
Email address: anilajaleel@gmail.com
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