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# Online Medical Education and Examinations during COVID-19: Perspectives of a Teaching Associate

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## ABSTRACT

The novel coronavirus disease 2019 (COVID-19) pandemic has not only challenged global health systems but also social, economic, and educational systems. In this short communication, our focus is on its impact on medical education in Pakistan. We discuss the structure of undergraduate medical education in Pakistan; and how it has evolved in the wake of COVID-19. We describe our role as teaching associates (TAs) at the Aga Khan University (AKU); and how it has enabled us to be a part of the transition to online medical education, with a specific focus on online examinations in medical schools.

**Key Words:** *Medical education, Online examinations, COVID-19, Pandemic.*

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## INTRODUCTION

Pakistan's first case of novel coronavirus disease 2019 (COVID-19) was registered on February 26, 2020,<sup>1</sup> and the government imposed a lockdown in the following weeks. Social distancing measures led to a pause in the traditional interactive classroom teaching format for all educational institutions. This was especially challenging for students of the Bachelor of Medicine, and Bachelor of Surgery (MBBS) programmes across the country. As part of their training, it is imperative for medical students to get hands-on experience in laboratories, clinics, wards, and operating theatres, as well as have meaningful interactions with their colleagues. It is this requirement of experiential and practical learning that makes medical training so unique and has compounded the extraordinary challenges faced by this field of education due to COVID-19.

As graduates of university's MBBS programme, and now working as teaching associates (TAs) for undergraduate medical education at the Biomedical and Biological Sciences (BBS) Department, we found ourselves better positioned to help identify these problems and to appreciate the disruption to medical education.

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## Responsibilities of a teaching associate:

To better understand these challenges and solutions, it is helpful to briefly discuss the structure of our undergraduate basic science curriculum pre-COVID and our role in it as TAs. The undergraduate medical curriculum for the first 2 years of MBBS is an integrated spiral curriculum based on multimodal strategies, comprising problem-based learning (PBL) sessions, interactive lectures, laboratory skills and clinical skills, organised within organ specific modules like the respiration and circulation module and the neurosciences module. The curriculum stresses on the fact that it is not necessary for basic sciences and clinical medicine to be mutually exclusive entities for pre-clinical students.<sup>2,3</sup>

In a typical module, a clinical case is introduced in a PBL session and groups of students are required to make, and subsequently discuss, learning objectives. PBLs are facilitated by medical college faculty and TAs, to ensure smooth functioning of the session. In the same week, relevant lectures, laboratory, and clinical skills sessions are offered. By combining an array of teaching methods into one module, students are equipped with all the tools to become effective and independent learners. This cycle is repeated every week for the duration of the module, till it concludes with an examination.

In addition to facilitating PBL sessions, TAs are also involved in teaching gross anatomy to medical students under the supervision of senior faculty. They are also assigned tasks related to clinical skills teaching and, very importantly, invigilation of examinations along with marking question papers and creating new examination questions.

## Medical education and examination strategies post-COVID:

Having anticipated the closure of educational institutions due to COVID-19, our institution had a system for online teaching up

and ready within a week of the university pausing on-campus teaching. All sessions, including PBLs, were conducted *via* online video conferencing. It has been an educational experience for the teaching faculty, as we had never conducted educational activities online to this extent prior to the pandemic. While, we seamlessly switched to online conduction of teaching and learning activities in a matter of weeks, the task of conducting examinations was more challenging. As opposed to regular classes and PBLs, online examinations are a monumental task due to the issues of security, monitoring unauthorised communication and ensuring that certain students are not disadvantaged because of logistical issues.<sup>4</sup> Thus, a system for online examinations that was secure and fair to all students and which did not compromise the standards of traditional in-person examinations, was required.

Planning for online examinations began shortly after universities were closed in March 2020. Once the initial foundation in terms of logistics, software and scheduling had been laid down, the TAs were inducted into the process. While some universities like King's College London<sup>5</sup> have adopted an online open-book examination taken from home, we designed an online proctored approach to our examinations. TAs and other faculty members were trained to act as proctors, who would monitor groups of students *via* video cameras as the students had set up themselves within their homes. After an initial proximity check to ensure that the examination set up was secure and fair for all students, the students would begin a timed examination on their computers without access to educational materials like books. The structure of the examination and time allocated to each question was specifically modified to encourage students to utilise their problem-solving capabilities instead of relying on looking up answers.

Several trial examinations were held over the course of the week to troubleshoot the examination process and iron out any kinks. These initial formative examinations (which were not graded) allowed us to test several video-conferencing platforms, improve the interface of the online teaching and examination platform, and gather feedback from students about the entire process. The TAs were also given ample opportunity to share their thoughts and to tweak the examination setup. Although the process of monitoring students taking examinations online within their homes felt strange and foreign to students and proctors alike, we gradually eased into the process. As TAs, we felt the decision to let us proctor the examinations, instead of outsourcing this to a third party online proctoring agency, allowed the students to be more comfortable with this process.

## DISCUSSION

The TA workforce predominantly comprises recent medical school graduates of this Institute, who are seeking to add a strong entry of teaching and leadership to their resumes in preparation for varied careers in medicine. As such, TAs have a unique perspective on undergraduate medical education. They can relate to medical students and the undergraduate

curriculum very closely as they have been through that entire process recently. At the same time, they must adjust to life on the side of medical faculty – carrying out their duties ethically and responsibly, and maintaining a level of decorum between themselves and their students.

With many countries facing the second wave of the pandemic and some still recovering from the first,<sup>6</sup> medical education will remain affected for some time to come. Through our experience, we hope to show that medical education and assessments can be successfully conducted online, even in resource-limited settings. This basic framework can be implemented at other institutions according to the needs of their students and the structure of their curriculum. As clinical faculty is increasingly engaged on the COVID-19 frontlines, recent medical graduates have an opportunity to fill in the gaps. Moreover, several elements of online medical education can be carried over into post-pandemic teaching. Computer-based examinations would remove many problems that arise with paper-based examinations, like printing errors and misplacement of examination papers.<sup>7</sup> Software capabilities on computer-based examinations allow students to track their progress throughout the examination and easily go back to unanswered questions with the click of a mouse, instead of flipping back through multiple pages. Additionally, systems can be put in place for automated marking of examinations, which would free up faculty, who usually devote hours to checking examination papers.

## CONCLUSION

Perhaps the best result of our efforts to convert to online teaching and examinations is our optimism that we will be able to meet the original timeline for promotion of our pre-clinical students to their clinical studies. We hope this will help alleviate the worries of students and their families, who were understandably concerned about the future of medical education amidst a sudden halt in life, as we know it. We have had the privilege to be part of a unique online examination experience, which is the first of its kind in our institution's long history. We strongly feel that the skills and grooming, we have acquired on this job, will help us immensely in our future roles as physicians. This Institution has always instilled in us the drive to succeed, and we brought the same determination to online teaching to make sure that we did not compromise the quality of medical education, even in its new form. This new approach to medical education seems to be the norm till the COVID-19 pandemic abates and so, we hope to continue to acquire new skills in the online dissemination of education.

### CONFLICT OF INTEREST:

The authors declared no conflict of interest.

### AUTHORS' CONTRIBUTION:

SMB: Conceived the idea for this research, and authored and edited the manuscript.

FM: Authored and edited the manuscript, and completed it for submission.

Both authors contributed equally to the manuscript.

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