



## FUTURE OF ONLINE MEDICAL EDUCATION: LESSONS LEARNED FROM THE COVID-19 EXPERIENCE

Usman Mahboob<sup>1✉</sup>, Akhtar Sherin<sup>2</sup>

**THIS ARTICLE MAY BE CITED AS:** Mahboob U, Sherin A. Future of online medical education: lessons learned from the Covid-19 experience. *Khyber Med Univ J* 2020;12(3):175-6. DOI: 10.35845/kmuj.2020. 20753.

COVID-19 pandemic led to global disruption of educational system and adversely affected about 1.6 billion learners, from schools to universities, across the world.<sup>1</sup> Like any other field, Covid-19 changed the panorama of medical education in general and clinical training in particular.<sup>2</sup> The major challenge for teachers and learners was to come out of comfort zones and shift to complete online education. This shift in routine would have been more of research-based but due to the pandemic situation it turned out to be more of experiential-based followed by research around those experiences. Major problems faced during switching from conventional to online education were technology-related including unequal distribution of technology infrastructure, student engagement/interaction in online education, blurring boundaries between personal and professional life, time management, low-level preparedness, competencies for e-learning, and lack of practical and clinical experience.<sup>2,3</sup> The adaptations of medical education probably met the speed of the spread of the infection. The adaptations have ranged from different aspects of teaching to assessment, and have also included student engagement, development of online resources, digital clinical experiences, virtual bedside teaching rounds, mentoring, online conferences, and faculty development initiatives.<sup>4-10</sup> The future of medical education has been previously discussed in the context of curricular changes, trends, identity, power and location.<sup>11-13</sup> The experience of the Covid-19 has further emphasized that the medical education trends and curricula would keep on changing, such as the need for developing competencies for e-learning, and some of these changes would be unpredictable.<sup>11</sup> Moreover, the professional identity, that is, "how we

think of/about ourselves?" keeps on shaping during the course of health professionals' academic qualification and passing through various professional experiences.<sup>14</sup> Switching to online medical education will shape our identity as health professionals and will indirectly change our power dynamics such as; between patient and doctors, teachers and students, and doctors versus other health professionals.<sup>14</sup> Similarly, the post-colonial divide between the eastern and western cultures in the context of medical education has also been somewhat defused after observing the response, fragility, and adaptability of medical education systems across different nations.

Some of the questions that we may foresee, based on these experiences are: how to prepare for the 'lack of preparedness' and uncertainty? how to address the reduced experiential learning time? how extreme situations and environments will influence medical education? and how medical education can do its job effectively in extreme situations? Few suggestions are already given in the literature to prepare our students in uncertainty such as, introducing epidemiology/evidence-based medicine modules, undergraduate research training, cognitive biases modules, and training students to understand and manage their professional and personal limitations.<sup>15,16</sup> Moreover, research should be focused on uncertainties and how to manage them? Further, the focus of our curricula, which still is predominantly on recall, should be on critical thinking and problem-solving skills.

In response to the reduced experiential learning time at workplace, more focus would be on simulation-based training akin to training of pilots, to ensure both

1. Director, Institute of Health Professions Education & Research, Khyber Medical University (KMU) Peshawar, Pakistan.  
Email<sup>✉</sup>:usman.mahboob@kmu.edu.pk
2. Chief Editor Khyber Medical University Journal, KMU Institute of Medical Sciences, Kohat, Pakistan

the doctor and patient safety in the workplace. There was also a debate during the Covid-19 whether to include undergraduate students in workplace, considering their safety, and if they are trained enough? The initial evidence showed encouraging results regarding effective & active involvement of medical students as frontline support during Covid-19 pandemic and it merits further research.<sup>17</sup>

The extreme situations may not only be in the form of pandemics but environmental changes, disasters and conflicts.<sup>3</sup> Again, simulation-based training to mimic such conditions has been used to train our students for the future.<sup>18</sup> Specific optional modules can be developed such as 'extreme physiology' that usually is emphasized in military, navy and air force for high altitude and deep sea courses. These courses or modules can be introduced as student selected components to prepare the students for future environmental changes, disasters and conflicts.

The future is bringing many opportunities in terms of artificial intelligence and robotic surgeries that will reduce our reliance on remembrance and surgical skills, but it also may bring some undesirable events, such as the current pandemic. Therefore, the medical curricula, our instructional designs, teaching and assessment methods, our roles as teachers will all evolve and the individuals and institutions that adapt would emerge as the leaders of the future.

### REFERENCES

1. United Nations. Policy Brief: Education during COVID-19 and beyond. August 2020. [Accessed on: August 24, 2020]. Available from URL: [https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/08/sg\\_policy\\_brief\\_covid-19\\_and\\_education\\_August\\_2020.pdf](https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/08/sg_policy_brief_covid-19_and_education_August_2020.pdf).
2. Dedeilia A, Sotiropoulos MG, Hanrahan JG, Janga D, Dedeilias P, Sideris M. Medical and surgical education challenges and innovations

- in the COVID-19 era: A Systematic Review. *In Vivo* 2020;34(3 Suppl): 1603-11. DOI:10.21873/invivo.11950.
3. Dhawan S. Online Learning: A Panacea in the Time of COVID-19 Crisis. *J Educ Technol Syst* 2020;49(1):5-22.
  4. Gaber DA, Shehata MH, Amin HAA. Online team-based learning sessions as interactive methodologies during the pandemic. *Med Educ* 2020; 54(7):666-7. DOI: 10.1111/medu.14198.
  5. Hannon P, Lappe K, Griffin C, Roussel D, Colbert-Getz J. An objective structured clinical examination: From examination room to Zoom breakout room. *Med Educ* 2020;54(9):861. DOI: 10.1111/medu.14241.
  6. Chandra S, Laoteppitaks C, Mingioni N, Papanagnou D. Zooming-out COVID-19: Virtual clinical experiences in an emergency medicine clerkship. *Med Educ* 2020; 10.1111/medu.14266. DOI: 10.1111/medu.14266.
  7. Hofmann H, Harding C, Youm J, Wiechmann W. Virtual bedside teaching rounds with patients with COVID-19. *Med Educ* 2020; 10.1111/medu.14223. DOI: 10.1111/medu.14223.
  8. Kazerooni AR, Amini M, Tabari P, Moosavi M. Peer mentoring for medical students during the COVID-19 pandemic via a social media platform. *Med Educ* 2020; 54(8):762-3. DOI: 10.1111/medu.14206.
  9. Nadarajah VD, Er HM, Lilley P. Turning around a medical education conference: Ottawa 2020 in the time of COVID-19. *Med Educ* 2020; 54(8):760-1. DOI: 10.1111/medu.14197.
  10. Eltayar AN, Eldesoky NI, Khalifa H, Rashed S. Online faculty development using cognitive apprenticeship in response to COVID-19. *Med Educ* 2020; 54(7):665-6. DOI: 10.1111/medu.14190.
  11. Mahboob U, Evans P. Key steps for managing changes in the curriculum. *J Coll Physicians Surg Pak* 2015; 25(2):85-6.
  12. Gwee MCE. Medical education: issues, trends, challenges and opportunities. *SMA News* 2003;35(2):5-8.
  13. Bleakley A, Bligh J, Browne J. Medical Education for the Future: Identity, Power and Location. Dordrecht: Springer Netherlands; 2011.
  14. Jawed S, Mahboob U, Yasmeen R. Digital professional identity: Dear Internet! Who am I? *Educ Health* 2019 Jan 1;32(1):33.
  15. Tonelli MR, Upshur REG. A philosophical approach to addressing uncertainty in medical education. *Acad Med* 2019;94(4):507-11.
  16. Royce CS, Hayes MM, Schwartzstein RM. Teaching critical thinking: a case for instruction in cognitive biases to reduce diagnostic errors and improve patient safety. *Acad Med* 2019 Feb;94(2):187-94. DOI: 10.1097/ACM.0000000000002518.
  17. Klasen JM, Meienberg A, Nickel C, Bingisser R. SWAB team instead of SWAT team: Medical students as a frontline force during the COVID-19 pandemic. *Med Educ* 2020; 10.1111/medu.14224. DOI: 10.1111/medu.14224.
  18. Pietsch U, Ney L, Kreuzer O, Berner A, Lischke V. Helicopter emergency medical service simulation training in the extreme: simulation-based training in a mountain weather chamber. *Air Med J* 2017;36(4):193-4.

**CONFLICT OF INTEREST**

Author declared no conflict of interest

**GRANT SUPPORT AND FINANCIAL DISCLOSURE**

NIL



This is an Open Access article distributed under the terms of the Creative Commons Attribution-Non Commercial 2.0 Generic License.

KMUJ web address: [www.kmuj.kmu.edu.pk](http://www.kmuj.kmu.edu.pk)

Email address: [kmuj@kmu.edu.pk](mailto:kmuj@kmu.edu.pk)