Massive Open Online Courses and Medical Education

To the Editor,

A 2010 publication by the Carnegie Foundation, "Educating Physicians: A Call for Reform of Medical School and Residency," highlighted the current challenges facing medical education, including issues surrounding quality, costs and the ability to deliver medical education to enough students.[1] In order to address these challenges, innovative learning methods are needed, such as those offered by the wide availability of the internet. Over the last decade, there have been a number of advances in online education, including the emergence of massive open online courses (MOOCs). These courses aim to deliver high-quality education to large numbers of students around the world via the internet and at little or no cost. Although the term 'MOOC' was coined by Cormier and Alexander in 2008 in their comments on the 'Connectivism and Connective Knowledge' course delivered by Siemens and Downes, MOOCs did not gain traction until 2012, when Sebastian Thurn launched his startup Udacity.[2] Since then, many MOOC platforms have been launched, including Coursera, Edx, and FutureLearn, among others. These courses have gone viral, attracting many millions of students and a number of elite institutions from around the world. The latest Coursera infographic indicates that over five million students and over one hundred institutions have participated in over five hundred courses with hope to revolutionize online education (Available from: http://blog.coursera.org/post/64907189712/a-triple-milestone-107-partners-532-courses-5-2, updated 2013 Oct; cited 2014 July 27). In this letter, I discuss the current and future role of MOOCs in medical education shedding the lights on the challenges facing such role with some suggestions to improve this newly developed model.

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The number of medical MOOCs is steadily increasing, with 73 courses offered in English by Coursera (Available from: https://www.coursera.org, updated 2014 Dec; cited 2014 July 27) and 19 courses by Edx (Available from: https://www.edx.org, updated 2014 Dec; cited 2014 July 27) in disciplines including genetics, physiology, pharmacology, and public health. The current format of these courses is formed mainly of three pillars; video lectures, exams and assignment and interaction forums. Discussions about the role of MOOCs in medical education between optimistic and skeptical are rapidly increasing. Regarding the points of optimism, these courses represent an excellent opportunity for medical students to learn new fields and topics (that may be not taught in medical school, such as bioinformatics and nanotechnology) by top world universities in their spare time for free. They also provide opportunities to interact with interested students in the same fields to discuss materials and collaborate. Despite these advantages, the issues of student persistence and high dropout rates appear as a key challenge facing MOOCs at this stage. In a recent study in 2014 to assess the dropout rates for courses (including medical courses), Jordan reported an average 6.5% completion rate.[3] However, these low rates were expected for an online education platform where students differ in their educational plans, goals for taking these courses and the importance of certificates to them. In addition, time management also plays an important role in dropout rates in a self-learning environment where most of students are enrolled in regular education with their usual duties.

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The numbers of medical students who participate in such courses and how they perceive them is still unclear. There are only a few studies that report post-medical course demographics. In a recent BMJ paper discussing the role of MOOCs in medicine, Harder showed that most of the current opinions expect an increased role in medical education, especially in premed programs and continuing medical education (CME).[4] At present, there are an uprising number of CME-accredited courses, however there is no academic credit for undergraduates for any MOOCs from any medical school in the US till now. This may be explained by the current debate about the effectiveness of MOOCs with its lecture-based learning style to cover all aspects of medical education, including the clinical part which necessitates patient interaction.

Flipped classroom, which is a newly introduced learning model that allows students to watch the lectures online at their home and leave class time for concept discussion with the instructor, has been proposed to be a more suitable model for medical education.[5] This new model permits more interaction between students and instructors (which is weak in MOOCs) promoting active engagement and shifting learning style from passive to interactive. This may save students' short learning time and involve them in more activities that will enrich their clinical skills. However, MOOCs still have the advantage of reaching a massive number of students which is deficient in flipping classroom model with its need to on-campus education along with its limited student registration.

In developing countries, a lot of expectations have been made on the role MOOCs may play in overcoming the lack of access to high quality education in these countries with their massive offer of free courses. Dr. Carol Aschenbrener, one of the medical MOOC instructors, hopes that MOOCs will be considered a good choice that will "help draw more low-income students to medicine and perhaps ease the shortage of doctors."[4] However, the fact that MOOCs present only theoretical background about the topic discussed with low ability to deliver clinical training raises questions about this expected role. The currently available demographic data show low participation from developing countries. Coursera's report showed that most of the participants were from developed countries, especially the United States and Europe, with low participation from Asia and Africa. This was attributed by Liyanagunawardena et al., to be due to complicated sets of conditions, such as lack of access to digital technologies, language, culture, computer literacy and infrastructure, among others.[6] More efforts are needed to address these problems and ensure that MOOCs reach in an efficient way to these countries.

In conclusion, MOOCs represent a great opportunity to spread high quality education to all students everywhere. Although it is still new, great steps have been achieved in its establishment. In medicine, there is an uprising role of these courses in medical education especially CME. However, it is important to address more specialized medical courses with curriculum-based style and to offer credits either for undergraduates or postgraduates to attract more students and solve the issue of dropouts. In addition, although MOOCs will not be sufficient to

solve the lack of medical workers in developing countries, they still represent a hopeful opportunity that we can build upon.

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References

1. Cooke M, Irby DM, O'Brien BC. Educating physicians: A call for reform of medical school and residency. San Francisco (CA): Jossey-Bass; 2010.
2. Mehta NB, Hull AL, Young JB, Stoller JK. Just imagine: new paradigms for medical education. Acad Med. 2013 Oct;88(10):1418-23.
3. Jordan K. Initial trends in enrolment and completion of massive open online courses. Int Rev Res Open Distance Learn. 2014;15(1):1-7.
4. Harder B. Are MOOCs the future of medical education? BMJ. 2013 Apr 26;346:f2666.
5. Prober CG, Heath C. Lecture halls without lectures--a proposal for medical education. N Engl J Med. 2012 May 3;366(18):1657-9.
6. Liyanagunawardena T, Williams S, Adams A. The impact and reach of MOOCs: A developing countries' perspective. eLearning Papers. 2013(33).