

# Massive Open Online Course (MOOC) in Continuous Nursing Education (CNE): Contributions and Challenges: A Review

*Khin TA<sup>a</sup>, Mohd Ali NA<sup>a</sup>, Musa@Mohd Zaid M<sup>b</sup>, Shaharzan NJ<sup>b</sup>*

<sup>a</sup>Critical Care Nursing Department, Faculty of Nursing, International Islamic University Malaysia

<sup>b</sup>Sultan Ahmad Shah Medical Centre, International Islamic University Malaysia

## ABSTRACT

In an advanced medical field, innovative technology becomes an important aspect of the health care system and the growth in quality of health care education process. Continuous nursing education (CNE) is a lifelong professional development to enhance the knowledge, skills and attitude of nurses for the development of nursing practice, education, administration and research. The development of massive open online course (MOOC) which is an e-learning platform, has changed the approach of continuous education. However, the pedagogy in MOOC CNE is still under-developed. Although numerous roles for MOOC have been proposed in both in and out campus for nursing programs, a clear rationale for their effectiveness is still nascent. This review attempts to explore MOOC and its contributions and challenges in CNE. Literature search was conducted on articles published between 2010–2020 in Ovid MEDLINE, Embase Ovid, Ovid Emcare and CINAHL Plus databases, ScienceDirect, Web of Science, ProQuest and the Google Scholar whereby only English-language and peer-reviewed journal articles were included. Eight articles were selected for review and three aspects were extracted: i) history of MOOC, ii) characteristics of MOOC in health care, and iii) its contributions and challenges to lifelong learning as well as CNE. The findings provided valuable insights about MOOC based CNE as an inspiring approach that holds a great potential to offer credible, cost-effective and readily accessible contents to the health care providers.

## Keywords

massive open online course, continuous nursing education, contributions, challenges.

## Corresponding Author

Dr. Khin Thandar Aung  
Lecturer, Critical Care Nursing Department,  
Faculty of Nursing, International Islamic  
University, Malaysia  
Tel No: +60129677943  
E-mail: khin\_ta@iiu.edu.my

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## INTRODUCTION

To improve professional development, continuous education is a crucial part of every profession including nursing. It is one of the fundamental prerequisites to fulfill nurses' educational needs in order to improve their existing knowledge as well as the quality of service in health care, reduce work stress, improve critical thinking, self-confidence, and initiative, accomplish better working conditions and certify that they are qualified nurses inpatient care.<sup>1</sup> Continuous education for nurses can also be challenging because of work schedules, personal responsibilities, and fear of returning to school.<sup>1</sup> Therefore, online continuous education and advanced online learning technologies are necessary to encourage nurses towards lifelong learning and professional development.<sup>1</sup> There are many positive outcomes towards online nursing education in terms of

achievement, satisfaction, and increased desire for learning mentioned in a lot of studies.<sup>2</sup>

Many studies found that online teaching is as effective as traditional teaching in continuous education for nurses.<sup>3</sup> E-learning plays an important role in continuous education because it is often accessible to a wider audience geographically and learners will learn at their own convenience. E-learning is an appropriate alternative method compared to the traditional learning environment for nurses because it can mitigate the problem faced by nurses who are unable to attend physical classes due to their work schedules.<sup>3</sup>

Web-based learning like MOOC can help professionals maintain competency and support professional practice as

it provides a standardized and compelling educational experience that enhances learning.<sup>4</sup> MOOC, which is an open-based online learning course accessible to a massive number of students was introduced as a result of rapid development in learning technology.<sup>4</sup> In line with the emergence of MOOC, the mode of continuous education has changed. MOOC online openness provides fragmented learning approach for continuous education, according to personal interest and convenience.<sup>5</sup>

A comprehensive literature review facilitated the various contexts on how e-learning including MOOC, was integrated into CNE. This review aimed to explore the various roles of MOOC in CNE and also highlighted on the situation of MOOC courses in CNE and its achievement.

## MATERIAL AND METHODS

### Search strategies

Electronic databases, standard search strategies were employed in searching the relevant literature on nursing education, continuous nursing education (CNE), lifelong learning, e-learning, online learning, MOOC and its contribution in continuous education for professional development. Eight electronic databases were used in this search viz. Ovid MEDLINE, Embase Ovid, Ovid Emcare, and CINAHL Plus databases, ScienceDirect, Web of Science, ProQuest, and the Google Scholar search engine. The inclusion criteria for this review were articles written in English and published in peer-reviewed journals between 2010-2020 to explore the MOOC history and its roles in lifelong learning and CNE. Any articles in the press, conference proceedings, and editorial pieces were excluded.

### Data extraction

From the 235 articles identified, 130 articles remained after the duplicates were removed. From that, 115 failed to meet the inclusion criteria. A total of 15 full text papers were subsequently screened by two independent reviewers and 8 full text articles met the inclusion criteria

as shown in Figure 1.<sup>6</sup> The selected papers were analysed via five steps including data reduction, data display, data comparison and then draw a conclusion. The reviewers critically reviewed and discussed the final results to be presented.

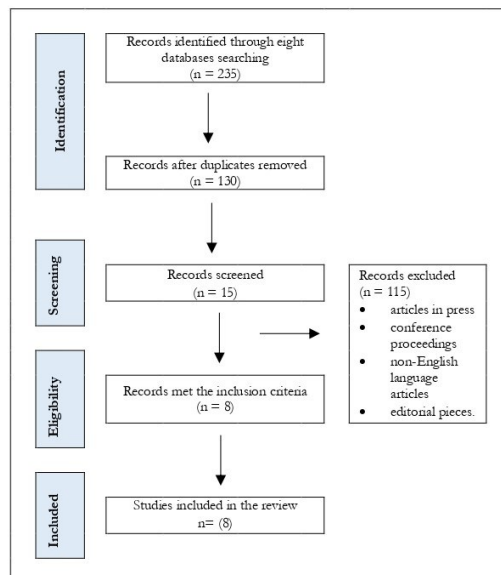


Figure 1. Search flow chart for the integrative review (adapted from PRISMA flow diagram, 2009)

## RESULTS

The results were presented based on three aspects extracted such as i) history of MOOC, ii) characteristics of MOOC in health care, and iii) its contributions and challenges to lifelong learning as well as CNE.

### History of MOOC

MOOC is a platform which provides online educational courses to a massive crowd of learners for free or at an affordable cost.<sup>7</sup> It is open to any student who is interested. It can be defined as a new stage using the internet for open and distant learning which moved quickly since 2012.<sup>7</sup> MOOC is mainly classified according to the pedagogical position such as connectivist MOOC (cMOOC) and extension MOOC (xMOOC).<sup>7</sup> Whilst cMOOC focuses on creativity, autonomy and social connections, xMOOC offers content using tools such as video presentations, quizzes, and traditional learning approaches. Some researchers have reported that MOOC is a disruptive educational trend in higher education and

lifelong learning.<sup>7</sup> MOOC initiatives like Coursera, Udacity, edX, which replicate a more traditional learning approach (xMOOCs) as well as MOOC based on a connectivist pedagogy (cMOOCs) allow learning in different areas and fields beyond frontiers, surpassing traditional online courses.<sup>7</sup>

### **Characteristics of MOOC in Health Care Education**

Over the past few years, the use of technology in health care education has developed. The trend of its usage is adapting to the challenges within the health care environment, i.e. altered societal expectations, advances of medical sciences and variety of pedagogical techniques in health care education.<sup>8</sup> The educational goals of health care education using technology are to facilitate essential knowledge acquisition, to enhance decision-making skills, to reinforce perceptual variation, to enhance skill coordination in practising for critical events and team training, and also to enhance psychomotor skills.<sup>8</sup>

Nowadays, many MOOC courses related to health care topics are available to assist learners improve their knowledge. These MOOC courses are offered through various commercial and non-commercial online platforms and may provide access to information compiled and presented by experts without the constraints of time, location, or level of education.<sup>9</sup> However, the ability to read and write in English could be a constraint for some learners. Consistent with a scientific review of health and medicine related MOOCs by Liyanagunawardena and Williams (2014), 98 out of 225 MOOC courses are free, no specified start and end dates, and are not associated with psychology, biology, life sciences, or animal health and disease unrelated to human health.<sup>9</sup>

The majority of MOOC courses are English and the duration of each course ranged between 3 to 20 weeks. Some MOOC courses provided participants with continuous professional development (CPD) credit points at the time of course completion but most courses appeared introductory courses.<sup>10</sup> MOOC courses were developed to coach physiotherapists about the way to manage spinal cord injuries, improve people's understanding of dementia, deliver courses to medical

students about anatomy, educate healthcare professionals on antimicrobial stewardship in low-income and middle-income countries, raise awareness of the real-world data science methods in medicine and teach the students skills of the way to communicate patients using virtual patients.<sup>10</sup>

### **Contributions and Challenges of MOOC in CNE**

One of MOOC most important impact was to make education available to people of all ages. It is a more convenient way of learning and can certainly encourage the social atmosphere for lifelong learning in generating a progressively knowledgeable society.<sup>11</sup> As a result of lifelong learning, participants can upgrade their knowledge and acquire the relevant skills continuously to upgrade their livelihood.<sup>11</sup>

MOOC offers several advantages that have led to growing popularity. One of the biggest advantages of MOOC is easy to access. The content is hosted online and is accessible at the learner's convenience. The course videos are pre-recorded, avoiding last-minute technical problems. These courses attract students from all over the world, hence offering an opportunity to exchange ideas. Globally, well-known professors may reach out to a large number of students through these online courses, which is not possible via conventional classroom methods. One MOOC course, can be delivered multiple times to a huge number of students, hence there is less administrative and delivery costs.<sup>12</sup>

Though these advantages of the MOOC make them an attractive proposition, certain limitations should also be considered. One of the main limitations of MOOC is high dropout rates.<sup>12</sup> MOOC may get thousands of enrolments, but few truly complete the course. Another drawback is, assessment in MOOC is based on self-report where examinations and end-of-course assessment are not supervised, hence the results might be biased. Likewise, MOOC is usually introductory, short-duration courses which can hardly be substituted with in-depth full-time courses. There is a limited financial incentive for course content developers, as these courses are usually free.<sup>12</sup>

While MOOC is successful in teaching the cognitive domain, it has to be adapted to be able to convey training for the psychomotor domain. Examples; abdominal examination or suturing a clean wound are skilled-base and would require close personal supervision, which is not catered through MOOC. Another concern relates to the accreditation of the courses.<sup>12</sup>

For the MOOC courses to be successful, engagement activities like communication and problem-solving, number of participants engagement, the length of time spent on learning activities, and the number of completed participants of the course are important.<sup>13</sup> Therefore, MOOC courses should design pre-testing, periodic testing of intended course outcomes, procedural as well as conceptual measures of learning and thinking, including embedded interactive activities to facilitate engagement and validated assessment measures to identify the effectiveness of the MOOC course.<sup>13</sup>

As a result, MOOC may bring together people among consumers, professionals, and policy makers, health care organizations, and universities in facilitating inclusive learning in evidence-based practice and patient-centred care.<sup>13</sup> This learning platform can promote prevention, intervention, as well as authentic, culturally appropriate patient-centred outcomes particularly for known chronic care conditions and global health concerns. Thus, MOOC can play a role in increasing public health literacy, providing continuous professional education and create innovative teaching models for student's learning patient-centred care.

## DISCUSSION

Today, the world is like a global village with increasing interconnectivity and interdependency hence continuous education is critical for the achievement of economic, political and social development. Without adequate higher education, research institutions and skilled people, society cannot ensure sustainable development.<sup>14</sup> Hence, digital technology has evolved to accommodate continuous education via e-learning approaches. MOOC is a recent phenomenon in online learning to address the lack of access to education. MOOC provides free learning

opportunities to a large number of learners who have access to internet.<sup>15</sup>

MOOC has become one of the foremost researched areas in open and distance education. It allows learners from diverse backgrounds to find a centralized learning platform and collaborate with a huge number of students worldwide.<sup>16</sup> MOOC courses are accessible for free or at a minimal cost, allowing unlimited number of participants with no pre-requisites. Just like other online classes, MOOCs can be accessed through computers, smartphones, or other digital devices and typically contains video lectures, interactive e-learning modules, assignments, and online discussions.<sup>16</sup>

Regarding MOOC pedagogy characteristics, cMOOCs follow the original concept of MOOC and based on connectivism which emphasises the importance of learning in networks and views learning as a process of connecting ideas, concepts or information sources. The current landscape is dominated by xMOOCs, as portrayed by courses in the online learning platforms Coursera and edX, which largely follow a traditional approach where the teacher is viewed as the expert and the student as a consumer of knowledge.<sup>17</sup>

CNE not only improve nurses' knowledge and skills but also promotes better patient care process and outcome. The delivery of CNE should encourage the nurses to accept new evidence-based practices, and discard or discontinue less effective care.<sup>18</sup> As the virtual learning world becomes an integral part of the academic landscape and blended mode, CNE activities offer maximum value.<sup>17</sup> MOOC for CNE, permits nursing training to be a more engaging, convenient, user-friendly, minimal cost, and accessible at any time.<sup>17</sup> Therefore, MOOC should be adapted for the twenty-first century.

MOOC can improve professional development as it is accessible to the worldwide audience. This is a huge boost in educating the general public on health and medicine, especially on public health-based subjects. It gives an opportunity to learners in collaborative, social and peer learning.<sup>18</sup> However, there are some challenges like limited methods to assess learning (e.g., internet,

language, skills in technology) and also, completion rate, issues associated with accreditation, certification and badges could be doubtful.

## CONCLUSION

E-learning helps nurses to keep up with the training at their own pace since they can review and revise the materials at their convenience. MOOC has gained popularity in recent times and have attracted many from all over the world due to convenience and easy access. MOOC in CNE programs could increase the scope of learning opportunities for nurses in the future that results in more excellent choices and academic autonomy in their professional development. CNE should strive to be a credible and accessible education, which will improve health care outcome. MOOC based CNE may be a stimulating approach that holds a wonderful potential to provide credible, cost effective and readily accessible content to health providers at their convenience.

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## CONFLICT OF INTEREST

The authors declare no conflicts of interest.

## REFERENCES

1. Yfanti F, Sipitanou AA. The importance of involving nurses in continuing education programs, *European Journal of Education Studies*. 2016; 2:1.
2. Karaman, S. Nurses' perceptions of online continuing education. *BMC Medical Education*, 2011; 11(1):1-6.
3. Bahrambeygi F, Shojaeizadeh D, Sadeghi R, et al. The Effectiveness of an E-Learning Program on Nurse's Knowledge and Behaviour for Caring of Patients with Thromboembolism: A Comparative Study. *Journal of Nursing and Healthcare Management*. 2018; 1:105.
4. Rankin J, Then KL, Atack L. Can Emergency Nurses' Triage Skills Be Improved by Online Learning? Results of an Experiment, *Journal of Emergency Nursing*. 2013; 39:1, 20-26.
5. Xiaoxia Lu. The Application of MOOC in Teacher's Continuing Education, 8th International Conference on Management, Education and Information (MEICI 2018), *Advances in Intelligent Systems Research*. 2018;163:224-229
6. Whittemore R, Knafl K. The integrative review: update methodology. *Journal of advance nursing*. 2005;52:546-53
7. Alario-Hoyos C, Perez-Sanaugustin M, Cormier D, Delgado-Kloos C. Proposal for a Conceptual Framework for Educators to describe and design MOOCs, *Journal of Universal Computer Science*. 2014;20(1):6-23.
8. Guze PA. Using technology to meet the challenges of medical education. *Transactions of the American clinical and climatological association*. 2015;126:260-270.
9. Liyanagunawardena TR, Williams SA. Massive Open Online Courses on health and medicine: review. *Journal of Medical Internet Research*. 2014;16:8.
10. Smith-Lickess SK, et al. Study design and protocol for a comprehensive evaluation of a UK massive open online course (MOOC) on quality improvement in healthcare. *BMJ Open*, 2019; 9: e0319 73.
11. Ghazali N, Nordin MS. The perception of university lecturers of teaching and learning in massive open online courses (MOOCs). *Journal of Personalized Learning*, 2016;2(1): 51-56.
12. Sarkar S, Bharadwaj B. Adapting massive open online courses for medical education. *International Journal of Advanced Medical and Health Research*, 2015;2:68- 71.
13. Goldberg LR, Crocombe LA. Advances in medical education and practice: role of massive open online course s. *Advances in Medical Education and Practice*, 2017;8:603-609.
14. R. Saadatdoost et al. Exploring MOOC from education and Information Systems perspectives: a

short literature review *Educational Review*, 2015; 67 (4):505–518.

15. Norman H. et.al. Massive Open Online Course for Lecturer Training: Development of Pedagogical Strategies for MOOCs. Proceedings of Public University Dean's Council 2015 Seminar, University Tun Hussein Onn Malaysia, Johore, Malaysia, 2015;14-15 September
16. Hoedebecke K, Mahmoud M, Yakubu K, et al. Collaborative global health E-learning: a massive open online course experience of young family doctors. *J Family Med Prim Care*. 2018;7(5):884.
17. Siemens, G. Connectivism: A learning theory for the digital age, *International Journal of instructional technology and distance learning*, 2005;2
18. Helmi Norman, Huseyin Dogan, Norazah Nordin, Zamri Mahamod, Lilia Halim. An Asia-Europe Massive Open Online Course for Lecturer Training: Development of Pedagogical Strategies for MOOCs. Paper presented at University Tun Hussein Onn Malaysia, Johore, Malaysia. September 2015.