

Research Article

<https://doi.org/10.23934/2223-9022-2022-11-3-501-505>

Online Course on First Aid in Emergency Medicine on the International Coursera Platform

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ABSTRACT

The pandemic of the novel coronavirus infection (COVID-19) has had an enormous impact on the education system. Higher educational institutions were forced to adapt to remote interaction with students and urgently switch to online learning. Currently, there are many educational platforms, among which one of the leading is the Californian Coursera service. In 2020, Kazan Federal University developed and published the first Coursera course on first aid – “Staying Alive! First Aid in Emergency”. The purpose of the current study was to demonstrate the course results in one calendar year. We analyzed the general indicators of Coursera – the global online learning platform. We reviewed the course indicators from December 21, 2020, to December 21, 2021. The research assesses the advantages and disadvantages of using online courses in the medical education system. It was concluded that massive open online courses effectively teach theoretical disciplines. In case of implementation of applied courses, it is necessary to search and introduce new approaches for practical skill development.

Keywords: massive open online course, online education, first aid, simulation training, emergency medicine

For citation Anisimov AA, Kiyasova EV, Valeeva YuV, Garaev AT, Kaligin MS, Satdarova VM, et al. Online Course on First Aid in Emergency Medicine on the International Coursera Platform. *Russian Sklifosovsky Journal of Emergency Medical Care*. 2022;11(3):501–505. <https://doi.org/10.23934/2223-9022-2022-11-3-501-505> (in Russ.)

Conflict of interest Authors declare lack of the conflicts of interests

Acknowledgments, sponsorship The study had no sponsorship

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INTRODUCTION

The novel coronavirus infection (COVID-19), unprecedented in its scale, has had an extraordinary impact on all areas of public activity around the world [1, 2]. A truly revolutionary change has taken place in the education system. According to a study by the UNESCO Institute for Statistics, in 2020–2021, the pandemic physically cut off from the educational process over 90% (more than 1.5 billion) of all the students around the world [3]. Decisive anti-epidemic measures in the form of global social isolation and the closure of both external and internal borders around the world have led to the fact that educational institutions were forced to adapt to remote interaction with students and switch to the online format. Thus, the pandemic gave a powerful impetus to the development of massive online education, the effectiveness of which has been debated since the 2010s [4, 5].

Today, the Internet is the only place for students to freely interact with universities from anywhere in the world. Modern educational platforms such as Coursera, OpenLearning, Udacity, OpenClassrooms, FutureLearn publish massive open online courses (MOOCs) which allow anyone with access to the Internet to freely obtain professional knowledge in a specialty of interest from the world's leading universities.

Courses on medical subjects are especially popular. And although the analysis of the available literature shows the unanimity of the authors in their opinion about the impossibility of replacing classical medical education with a distance format, the use of online courses as an additional educational resource is a promising tool for digitalizing the educational process, which cannot be ignored at present [6–8].

Kazan (Privolzhsky) Federal University successfully meets modern technological challenges [9]. In 2020, the authors of this article developed the first MOOC among Russian universities on the topic of first aid in emergency medicine on the Coursera platform, which marked the entry of Russian medical education to the international level.

Aim: The aim of this article is to present the results of the implementation of “Staying Alive! First Aid in Emergency” MOOC based on the Coursera international educational platform in one calendar year.

MATERIAL AND METHODS

The authors analyzed the general indicators of the Coursera international online education platform. An analytical review of the course indicators for the period from December 21, 2020 to December 21, 2021 was carried out. An assessment was given of the advantages and disadvantages of using MOOCs in the system of medical education.

RESULTS

Coursera is currently one of the leading global platforms for MOOCs. It is used by more than 175 leading universities in the world, such as Stanford, Harvard and Yale Universities (USA), which offer over 4,400 massive educational courses, as well as 33 full-fledged master's online programs. At the end of 2021, 92 million students from more than 200 countries (2.4 million from Russia) were registered on the platform [10].

In total, the platform contains 191 educational products on medical topics: 176 online courses, 11 retraining programs and 4 full-fledged master's programs. The leaders in this direction are Stanford University (USA) which has 19 educational resources, Johns Hopkins University (USA) - 14 resources, University of Geneva (Switzerland) - 8 resources. Most of the courses are devoted to fundamental and theoretical disciplines: anatomy, neurobiology, psychology, translational and precision medicine, etc. The topics of masters and retraining programs are one way or another related to public health, medical statistics and healthcare management.

Speaking of few clinical disciplines, it is necessary to highlight the retraining program for medical workers at the University of Colorado (USA) which includes six courses on emergency medical care. During the training, the authors talk about the principles of providing assistance to victims at the prehospital stage from the position of an ambulance team specialist. If desired, the students can learn the necessary practical skills by completing the partnership program of the Denver Department of Public Health Nursing Unit. In case of successful completion of retraining and passing practical skill test, the young specialists are allowed to work as paramedics in the state of Colorado [11].

Russian medical MOOCs on the platform are represented by single courses of Saint Petersburg State University (“General Pathophysiology”, “Physiology of the Heart”), Peoples’ Friendship University of Russia (“Pharmacology of Antibacterial Agents”), Novosibirsk State University (“Dermatology: Path to the Skin”) and National Research Tomsk State University (“Combining Health and Society”). Notably, there is not a single course on the Coursera platform from specialized Russian institutions of higher medical education.

On December 21, 2020, Kazan Federal University published a MOOC on the topic of first aid called “Staying Alive! First Aid in Emergency”[12]. Currently, this is the only course on the platform aimed at teaching first aid skills to both medical and non-medical professionals.

The course was developed by the staff of the Department of Emergency Medicine and Simulation Medicine using modern simulation equipment of the Institute of Fundamental Medicine and Biology.

The MOOC is free to learn and consists of 5 modules on the following topics: First Aid for Cardiac Arrest, Airway Obstruction/Drowning, Bleeding and Trauma, Burns and Frostbite, Loss of Consciousness, Stroke and Seizure (Figure 1).

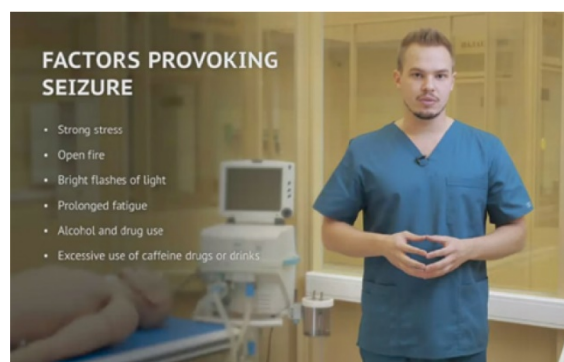


Fig. 1. A still from the «Staying Alive! First Aid in Emergency» course video

Each module includes training videos, demonstrational presentations and tests of control, for the study and passing of which one week is allocated. If necessary, a student can contact the teacher via the support chat. At the end of the entire course, the students take a final test. Those who successfully pass the final test of control, optionally for a fee, can receive a certificate of course

completion. Taking into account the international level of the platform, the training is conducted in English.

For the period from December 21, 2020 to December 21, 2021, the “Staying Alive! First Aid in Emergency” course was attended by 16,709 people. Of these, 33.8% (5652) registered for the course as attendees.

The division of the students by age: 13-17 years old - 1.09%, 18-24 years old - 25.55%, 25-34 years old - 45.62%, 35-44 years old - 20.07%, 45-54 years old - 5.84%, 55-64 years old - 1.46%, 65 and older - 0.36%. The structure of students by gender: men - 46%, women - 52%, other - 2%.

Among the countries, the leaders in terms of the number of course participants were: USA - 18.32%, Egypt - 17.51%, India - 15.20%, Philippines - 8.59%, Russian Federation - 5.77%, Great Britain - 4.71 % and Canada - 4.26% (Fig. 2).

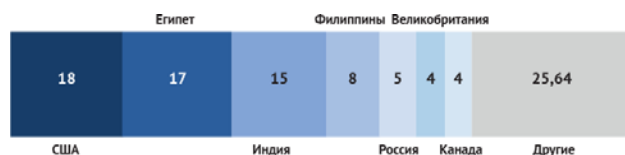


Fig. 2. Distribution of course participants by country, in %

The theoretical material draws praise: the average rating of the course by users is 4.9/5.0 points (Fig. 3). However, leaving feedback, students often express regret about the impossibility of consolidating the learned material with practical skills on the simulation equipment demonstrated in the modules.



Fig. 3. A still from the «Staying Alive! First Aid in Emergency» course video

CONCLUSIONS

The experience of the authors of this report repeats the world experience in the implementation of massive open online courses. Online courses are a good tool for optimizing the educational process in emergency medicine and the development of remote education. Moreover, Coursera is a promising learning platform for demonstrating the material and technical capabilities of a university for a wide, in particular, international audience, and at the same time, increasing the prestige of the university abroad.

At the same time, the widespread use of massive open online courses in medical education is expedient only as a presentation of theoretical disciplines and within the framework of additional professional education programs. In cases of implementing applied online courses in emergency medicine, massive open online courses can effectively act as an auxiliary educational resource under condition of mandatory further mastering of practical skills on simulation equipment. Given the remote format, low-cost and commonly available items (e.g., plush toys for practicing CPR during cardiac arrest, or tangerine/banana peel for practicing surgical skills) can serve as technical support tools that allow trainees to simulate a close to reality situation.

Thus, the development of massive open online courses is an indisputable trend in modern education in the post-COVID world, which has its advantages and disadvantages. In this regard, developers need to search for and implement new approaches for the students to master practical skills.

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Received on 21.02.2022

Review completed on 19.04.2022

Accepted on 29.06.2022