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**DISTANCE LEARNING FOR PHARMACISTS DURING
THE COVID-19 PANDEMIC**

Abstract. *The article discusses the relevance of improving the process of distance education in the medical and pharmaceutical industries. The 2019 coronavirus disease (COVID-19) pandemic has impacted every aspect of our lives, including education and the economy as it is known. Governments issued directives to stay at home, resulting in the closure of colleges and universities around the world. Consequently, online classes have become a key component of lifelong learning. This study aims to explore the situation of distance E-learning among medical students during their clinical years and to identify possible challenges, limitations, satisfaction as well as perspectives for this approach to learning. Among them a complicated identification of distance students and the need for a clear accounting of educational standards are highlighted which require a regional perspective the teaching content. Special attention is paid to the assessment of the adequacy of students online courses that provide an integrated approach, taking into account the knowledge and skills of independent work. The need to consider the contingent of listeners is indicated when recruiting groups and their level of ownership of computer technology. In the article it is noted that the heavy workload of modern medical educators creates obstacles to their quality direct contact with remote students, and low bandwidth electronic networks in small communities excludes qualitative provision of remote services.*

Keywords: *distance learning; medical education; pharmacy; problems.*

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**ДИСТАНЦІЙНЕ НАВЧАННЯ ФАРМАЦЕВТІВ ПІД ЧАС
ПАНДЕМІЇ COVID-19**

Анотація. *У статті розглядається актуальність вдосконалення процесу дистанційного навчання в медичній та фармацевтичній галузях. Пандемія коронавірусу 2019 року (COVID-19) вплинула на всі аспекти нашого життя, включаючи освіту та економіку. Уряди видали розпорядження залишатися вдома, що призвело до закриття коледжів та університетів по всьому світу. Отже, онлайн-класи стали ключовим компонентом навчання. Це дослідження має на меті вивчити ситуацію дистанційного електронного навчання серед студентів-медиків та виявити можливі виклики, обмеження, задоволеність, а також перспективи такого підходу до навчання. основні недоліки та проблеми у функціонуванні дистанційної освіти в Україні. Серед них виділено ускладнену ідентифікацію дистанції студентів, необхідність чіткого обліку освітніх стандартів, що вимагає регіональної перспективи змісту навчання. Особлива увага приділяється оцінці адекватності онлайн-курсів студентів, що забезпечують інтегрований підхід з урахуванням знань та навичок самостійної роботи. Вказано на необхідність враховувати контингент слухачів при наборі груп та рівень їх володіння комп'ютерними технологіями. Показано, що велике навантаження сучасних медичних викладачів створює перешкоди для їх якісного прямого контакту з віддаленими студентами, а низька пропускна здатність електронних мереж у невеликих громадах виключає якісне надання віддалених послуг.*

Ключові слова: *дистанційне навчання; медична освіта; фармацевція; проблеми.*

Introduction. *New coronavirus pandemic (SARS-CoV-2) has caused significant changes in the education of pharmacists and others. Online learning has become popular in higher education. Over the past decade, colleges and universities around the globe have shifted*

their education from traditional instructor-delivered dedicated lectures to more electronic learning. Healthcare disciplines' education systems are among the main professions that incorporate online learning in their curricula.

Distance or online learning is not a new concept; however, for many of us as physicians and pharmacists – it is a departure from our traditional classroom teaching model for students. In 2004, Drs. Cook and Dupras published an article explaining the most effective way to create an online learning platform to be used in medicine [1]. They emphasize the importance of a convenient and intuitive website design that is well supported, as well as the integration of self-assessment features to ensure that learners are properly engaging in the material. More recently, Virginia Gewin described helpful tips in the transition to online learning. She notes the importance of creating much more focused lessons for online learning that highlight a few main points. She notes the utility of live-video conferencing for follow-up to the previously described self-learning module, but states that live conferencing should not be used for all educational activities due to poor connections and overuse [3]. Cook, Dupras, and Gewin all agree that the most effective platforms enabled learners to interact with the material [1, 3]. Using this method, students can pursue the information at their speed and engage in the course through feedback and commentaries. These concepts are imperative to keep in mind as we transition as a specialty to online instruction. This is a unique opportunity to consider long-term plans for how to educate residents and maintain continuing medical education as a specialty in a pandemic.

Distance learning has been implemented in Ukraine for about twenty years. Distance learning technologies are used in most institutions of higher education in Ukraine. Technological means of supporting distance learning, in particular information and communication, are progressing, which requires their understanding of for the purpose of use for educational purposes, in particular in the field of higher education.

Objective. The main purpose of the article is to study the current state of distance learning in Ukraine and the use of distance learning technologies in institutions of higher pharmaceutical education in Ukraine, on the example of institutions of higher education in the world.

The main problem is that due to the coronavirus, all educational institutions were forced to immediately switch to full distance learning, but not all were ready for this. This moment is likely to be remembered as a critical turning point between the “time before,” when analog on-campus degree-focused learning was the default, to the “time after,” when digital, online, career-focused learning became the fulcrum of competition between institutions [10]. A growing number of colleges and universities have been implementing a transition from traditional face-to-face teaching methods to online teaching or a combination of online and traditional teaching (blending). The blended method of teaching involves replacing part of the face-to-face interaction with online instruction. As online education continues to grow, a study in the United States has reported that many educators are just beginning to transform their face-to-face teaching to an online environment [8].

Education is one of the least digitized and most people-intensive economic sectors – suggesting that the opportunity for and risk of technology-driven disruption is strong. Following a slow, two-decade march toward more digital business models, higher education's overdue technological transformation has been rapidly accelerated by the events of 2020, and centers more than ever on technology – and analytics-driven online learning experiences and business models.

Challenges to online education reported in the medical literature so far include issues relating to time management, use of technology tools, students' assessment, communication, and the lack of in-person interaction. Besides, online education may not be equitable in terms of access and the quality of teaching. Some students do not have access to laptops, or high-speed internet at home. Also, older internet users benefit the least from online education for

reasons such as technophobia. Many teachers themselves are technophobic, i.e., they are worried or not confident enough about dealing with computer hardware and software in their classrooms.

In contrast, other commentators have predicted that the COVID-19 pandemic would have a positive impact that will lead to wider acceptance of online and technology-enabled education. Even before COVID-19, there was already a high growth and adoption of education technology. Advocates of this viewpoint believe that online education is as effective as traditional classroom education. Moreover, switching over to online instruction during an emergency acts as a reset button to the ailing traditional educational system. The transition to online education requires the faculty's support in the universities planning such a transition. Of note, 80% of institutions surveyed in a study conducted in the United States confirmed that faculty members are being offered some support for their online courses [8].

The main purpose of the study is to analyze the state of pharmaceutical distance learning in Ukraine and compare with the experience of other countries.

Analyzing the study of the impact of the COVID-19 pandemic on online education at the University of Pharmacy at Alfaisal University in Riyadh, Saudi Arabia, it showed that medical students are interested in participating in decision-making on issues that may affect their education. Thus, it is reasonable to involve teachers and students in the process of renewing education at a difficult time [4]. However, a low response rate from medical students is expected as medical students experience stress in trying to adapt to new learning methods in the midst of a pandemic.

Results. As a result of the research, data were taken from a survey of students of pharmacists from different medical schools (i.e. University of Jordan, Jordan University of Science and Technology, Yarmouk University, Hashemite University, Mutah University, and Al-Balqa'a University) [5].

Various platforms and applications had been implemented in distance learning including ZOOM, Microsoft Teams, WhatsApp groups, Facebook groups, YouTube channels, Moodle, and Skype. While most students reported using multiple platforms in their learning (64.7%), ZOOM was the most commonly used single platform in delivering educational sessions (35.3%) [5].

Regarding reported benefits, drawbacks, and challenges of distance learning, 55.9% reported having multiple advantages including time-saving, flexibility of class, improved interaction with instructors and classmates. A minority of students (5%) reported no benefits in comparison to traditional learning. The main drawbacks were the low quality of teaching reported by (48.3%) of responders and poor interaction with instructors reported by (62.1%) of responders. Internet streaming quality and coverage was the main challenge that was reported by 372 students (69.1%) [5].

Based on students' opinions regarding instructors' role and performance in distance learning, 64.3% of students had agreed that instructors were actively participating in their discussions and 78.3% of students admitted that instructors approached them using multimedia to achieve desired course objectives. The majority of students reported an efficient response to their inquiries from instructors (i.e. 86.6% reported response in less than 48 h). On the other hand, the time dedicated to distance learning sessions was not adequate according to 26.5% of students. Overall, only 144 students (26.77%) were satisfied with their experience in medical distance learning [5].

This study aimed to evaluate clinical medical students' experiences in computer mediated distance e-learning, which is considered a newly adopted approach in medical schools. Distance e-learning has emerged as a new method of teaching to maintain the continuity of medical education during the COVID-19 pandemic.

In this study, we explored student's opinions toward major challenges they faced during their new experience of learning, limitations, faculty staff performance, overall satisfaction as well as future perspectives. Despite the rather extensive list of positives qualities of distance education, as in any other form training, it can identify several shortcomings. First of all, it is difficult to identify remote students, because at the present stage of technology development it is difficult to check who is taking the exam. However, Universities that provide distance learning courses, found a way out of the situation in the mandatory presence student on several exams in higher education.

The next factor that is difficult to consider when organizing distance learning in the medical field is education standards. They should facilitate the verification and monitoring of educational outcomes, as well as the search for optimal ways to achieve these outcomes. Therefore, in the development of distance learning programs it is necessary to create conditions for information support of consumers at the level of the country as a whole, individual regions and educational institutions in particular. The latter is important because despite the importance of nationwide standards, they are only in the nature of normative guidelines, invariant for this level of education in general

Conclusions. Our study revealed that there has been a positive impact of the COVID-19 pandemic on online medical education. Challenges brought about by the pandemic included those related to communication, student assessment, use of technology tools, online experience, pandemic-related anxiety or stress, time management, and technophobia. Despite these challenges, the experience respondents have had during the first few weeks of the pandemic has increased their confidence in the effectiveness of online medical education. With advances in technologies and social media, distance learning is a new and rapidly growing approach for undergraduate, postgraduate, and health care providers.

Regardless of reported benefits, medical students preferred the blended approach in teaching as distance learning represented a major challenge to acquire adequate clinical medical skills. Satisfaction in distance learning is strongly linked to students' prior experience in distance learning as well as instructors' experiences and interactions. Technical and infrastructural resources reported as a major challenge for implementing distance learning, so understanding technological, financial, institutional, educators, and student barriers are essential for the successful implementation of distance learning in medical education.

While pandemics have historically created challenges, identifying these challenges is the first step in converting them into opportunities. One of the chief opportunities is to engage medical students and faculty in transforming the current pandemic-imposed remote medical education into an evidence-based paradigm. However, the study poses more questions than answers. For example, has the conventional medical education, as we know it, changed forever, and is online learning the future of medical education?

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