

Detailed Analysis After 18 Months of Distance E-Learning for Pharmacists in Bulgaria

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Abstract

Continuous professional development plays an important role in enhancing the professional growth of pharmacists. The Bulgarian Pharmacy has introduced an e-learning platform for distance learning for pharmacists in Bulgaria, helping them improve the quality of their services and ensure better patient care. This study seeks to evaluate and summarize the quantitative and qualitative engagement with the e-learning platform. The initial eighteen-month data, spanning July 1st to December 31st, 2019, were analyzed using descriptive statistical methods. During this period, the platform featured five active modules and was used by 24.3% of the active BPhU members. The participation rates in the modules ranged from 22% to 63% of the platform's visitors. Each module concluded with a test, and the study measured the average success rate in percentages, the average time taken to complete the test, and the proportion of users who attempted the test multiple times to achieve a passing score. The BPhU's e-learning platform has demonstrated its effectiveness as a valuable resource for delivering CPD training to pharmacists across Bulgaria.

Keywords: Pharmacists, Continuous professional development, Distance e-learning, Bulgaria

Introduction

What is continuous professional development (CPD)? The Academy of Medical Royal Colleges in the United Kingdom defines it as “an ongoing process, outside formal undergraduate and postgraduate training, enabling individual doctors to sustain and enhance standards of medical practice by advancing their knowledge, skills, attitudes, and behavior” [1]. CPD can also be described as a self-directed, systematic, evidence-

based approach to lifelong learning, designed to address the educational needs of healthcare professionals and improve their performance [2, 3].

In both Europe and globally, CPD plays a pivotal role in the career growth and professional development of healthcare practitioners [4, 5]. Pharmacists, as healthcare providers, are equally required to engage in CPD [6, 7]. This process is critical in maintaining professional excellence, enhancing patient care, fostering public trust in the pharmacy profession, and is widely considered an ethical obligation in healthcare [8-10]. Moreover, CPD represents both a professional duty and an ethical responsibility for pharmacists, ensuring they remain equipped with the latest competencies and skills to achieve optimal therapeutic outcomes for their patients [11].

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Research shows that CPD plays a crucial role in enhancing the quality of pharmacists' work, enabling them to provide better care to their patients [12, 13]. Pharmacists recognize the value of engaging in continuous professional development as a means to sustain their professional skills and apply newly acquired knowledge in their daily practice [14]. Additionally, CPD is instrumental in facilitating socially significant campaigns delivered through pharmacy services [15]. At the same time, the continuous introduction of technologies and innovations in the field of pharmacy requires pharmacists to consistently update their knowledge throughout their careers [16].

Increasingly, health professional education incorporates training approaches under the umbrella of “Technology-Enhanced Learning” [17-20]. A 2017 study by Scott *et al.* outlined 10 principles for effective “Technology-Enhanced Learning”: clarify objectives and conduct needs assessments; allocate adequate resources and technology; integrate proven methods to enhance learning; consider the importance of competency-based components; encourage interaction among participants; create tailored resources for diverse groups; pilot test before implementation; provide ongoing support to learners; offer opportunities for adaptation to improve retention; and measure educational outcomes rather than just participation [21].

In Bulgaria, pharmacists holding a master's degree are required to consistently update their professional knowledge and skills to provide accurate consultations to patients and share relevant drug information with other healthcare professionals. This obligation is regulated by professional codes and internal guidelines. Pharmacists must accumulate a specified number of credit points annually, with each CPD activity accredited by the Quality Commission of the Bulgarian Pharmaceutical Union (BPhU) and assigned a corresponding number of credit points.

This ensures that pharmacists meet the growing expectations of the public [7]. Traditionally, CPD activities for Bulgarian pharmacists have primarily involved in-person events, such as congresses, courses, seminars, and workshops. However, these face-to-face formats present challenges, as pharmacists often need to travel, take time off work, and attend at specific times. These obstacles are particularly significant for

pharmacists in remote or smaller towns, especially when only one pharmacist operates a pharmacy [22].

To address these issues and better support CPD requirements, the BPhU introduced a distance education platform for e-learning. Built on a Moodle framework, the platform is accessible to all BPhU members at any time and from any location using digital devices such as laptops, tablets, or smartphones. Currently, the platform offers five active modules, focusing on relevant professional topics.

This study aims to evaluate and analyze both the qualitative and quantitative utilization of the distance education platform over its initial 18 months of operation, from July 1, 2018, to December 31, 2019.

Materials and Methods

Starting in July 2017, BPhU implemented a contemporary Moodle-based distance education system designed for continuous professional development. Analyzing the frequency and manner of its use, along with evaluating the educational outcomes and module performance, is essential. This assessment relies on descriptive statistics and utilizes the platform's pre-established features, including accessibility, visit frequency, achievement levels, and feedback evaluation.

Results and Discussion

The primary aim of the distance e-learning platform is to ensure that individuals can access continuous professional development at any time, irrespective of their location, work commitments, or schedule. The platform's interface is accessible via the intranet at www.bphu.bg.

Over the initial eighteen months, the e-learning platform included five active modules, which were accessed by 24.3% of the active members of the BPhU. These modules included:

- Medicinal care for patients using inhalers for COPD and asthma treatment—launched in June 2017
- Diagnosis, prevention, and protection against sexual and household violence—launched in June 2017
- Falsified medicines directive and directive 2011/62/EU—launched in February 2018
- The role of pharmacists in assisting patients undergoing treatment with biosimilar and biotechnology products – launched in April 2018

- Academy Biotechnology – launched in May 2018

The first two modules, “Medicinal care for patients using inhalers for COPD and asthma treatment” and “Diagnosis, prevention, and protection against sexual and household violence,” launched in June 2017, had the highest participation rates, at 63.16% and 60.20%,

respectively. In addition, more than half of the platform users (57.57%) completed the module, “The role of pharmacists in assisting patients undergoing treatment with biosimilar and biotechnology products,” which was launched in April 2018. Participation percentages for each module are shown in **Figure 1**.

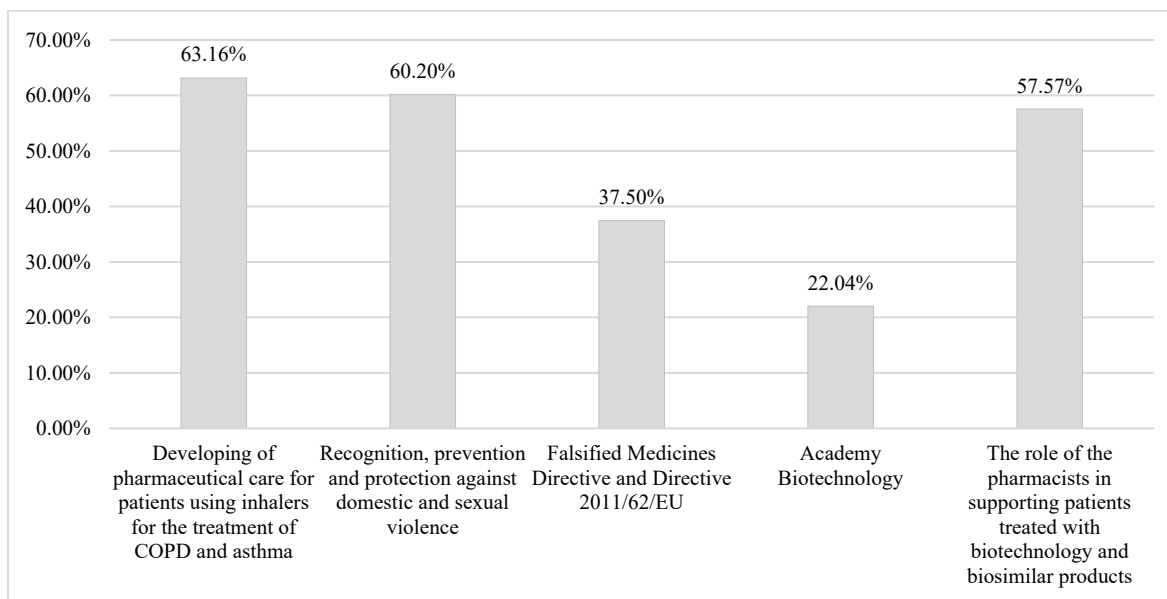


Figure 1. Percentage of the participants in the different modules

Each module concludes with a test that is time-constrained and has a set number of attempts. To have the educational module accredited as CPD, a pharmacist must achieve a passing score of at least 50%. We

analyzed the average success rates, the time spent to complete the test, and the proportion of users who retake the test to pass (**Table 1**).

Table 1. Analysis of test success rate

Educational module	Average test rates in percentage	Average time to finish the test	Taking the test more than once
Medicinal care for patients using inhalers for COPD and asthma treatment	74.90%	0:09:43	31.77%
Diagnosis, prevention, and protection against sexual and household violence	92.00%	0:24:09	10.93%
Falsified medicines directive and directive 2011/62/EU	82.05%	0:08:43	12.28%
Academy biotechnology	66.10%	0:19:40	17.91%
The role of pharmacists in assisting patients undergoing treatment with biosimilar and biotechnology products – launched in April 2018	86.90%	0:12:11	0.00%

Initially, fewer than 70% of pharmacists were able to pass the test of the first module on their first attempt when the platform was launched. However, as new modules were

added and pharmacists became more familiar with the platform’s features, progress could be monitored. For example, in one of the later modules, “The role of

pharmacists in assisting patients undergoing treatment with biosimilar and biotechnology products,” every participant passed the test on their first try. This reflects an improvement in the understanding of the platform, its functionalities, and its benefits for pharmacists. The average success rates for the tests ranged from 66.10% to 92.00%.

The healthcare environment is being significantly influenced by rapid transformations, rising costs, and technological progress. As a result, there is a growing need to deliver value-based healthcare services and develop new models of care delivery [23]. Meanwhile, pharmacists must adapt to digitalization and evolving practices. Pharmacy graduates are now expected to actively participate in direct patient care through collaborative efforts, manage medications extensively, and provide preventative healthcare services [24]. Moreover, pharmacy education now includes a broader scope of responsibilities, such as preparing and dispensing medicines while ensuring comprehensive pharmaceutical care [25]. These developments have led to an increased demand for competency assurance in the profession [26].

Social expectations require a healthcare system that is secure, patient-centered, evidence-based, and efficient [27, 28]. The profession should evolve to meet the requirements of a value-based healthcare system, and this shift should be reflected in our current continuing education framework as well [10, 29]. Key advancements to consider include:

- Moving beyond a system based on attendance and credits;
- Placing greater emphasis on collaboration and interprofessional education;
- Connecting needs assessment and function gaps with quality improvement initiatives.

The integration of CPD to support the professional development needs of healthcare professionals can help achieve many of these advancements while maintaining ongoing proficiency in practice [30]. Pharmacy schools and colleges play a critical role in leading the shift toward self-directed learning [26]. As practice evolves, the need for individual learning has also shifted. Structured, effective, and intentional CPD is essential to succeed in the changing healthcare landscape [31]. Additionally, to maximize learning outcomes, CPD should be designed to

simplify, engage, and lead to changes in learner behavior [32, 33]. Employers, pharmacy organizations, and educators must foster supportive environments for CPD that encourage learner success and community development. The adoption of a CPD approach by pharmacy professionals can enhance the role of pharmacy within healthcare [3]. It represents a commitment to patient care, with pharmacy regulators and professional bodies increasingly requiring CPD participation. However, until CPD becomes ingrained in the professional culture and a part of pharmacists' regular practice, accumulating credit points to meet legal requirements will continue to be the norm [10]. CPD organizers must assess the needs of their audience to determine the most appropriate approach for their educational interventions [34].

Conclusion

Our analysis indicates that, during the first eighteen months following its launch, the distance e-learning platform gained the interest of pharmacists in Bulgaria. However, their engagement with the platform does not meet the initial expectations, suggesting that further promotion, notifications, and information dissemination are necessary.

As per the National e-register of the BPhU, 26% of pharmacists practice outside the capital and regional city centers. A review of the participant profiles in face-to-face educational modules reveals that these pharmacists often face challenges attending due to travel constraints and the difficulty of closing their pharmacies. This underscores the importance of promoting distance-based continuous professional development, particularly in areas where access to traditional CPD events such as seminars, congresses, and workshops is limited.

This study is particularly significant in light of the COVID-19 pandemic and the increased emphasis on distance e-learning during this period. The findings can serve as a basis for future comparisons with the evolution of distance e-learning CPD platforms globally.

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