

ПІСЛЯДИПЛОМНА МЕДИЧНА ОСВІТА ТА БЕЗПЕРЕРВНИЙ ПРОФЕСІЙНИЙ РОЗВИТОК ЛІКАРІВ ТА СЕРЕДНЬОГО МЕДИЧНОГО ПЕРСОНАЛУ В УКРАЇНІ / POSTGRADUATE MEDICAL EDUCATION AND CONTINUOUS PROFESSIONAL DEVELOPMENT OF DOCTORS AND MEDICAL STAFF IN UKRAINE

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DISTANCE LEARNING OF MEDICAL PHDS
IN UKRAINE UNDER COVID19 AND WAR
WITH RUSSIA: A NEW REALITIES

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Summary

Introduction. Distance learning during the COVID-19 outbreak in 2020-2021, and the Russian war actions which started in 2022, which we refer to as "training under and after attacks," has had a significant impact on medical undergraduate and postgraduate training in Ukraine. Despite the challenges posed by these events, the implementation of distance learning for medical PhD students proved to be beneficial for their academic performance, and regarded it as advantageous.

The aim of the research is to explore the peculiarities of distance learning for medical PhD medical students, including its organization, main advantages, disadvantages, and challenges. The research focused on the experience of distance learning of medical PhD students, particularly at Bogomolets National Medical University in Ukraine, and some others.

Material and methods. To determine the effectiveness of distance learning for future medical PhDs, we analyzed the performance in the course "Academic and Medical English for Medical PhD Students" of 247 medical PhD students, aged 21 to 59, who were enrolled in the course at Kyiv Medical University, Bukovinian State Medical University, Zaporizhzhia State Medical University, Kharkiv Medical Academy of Postgraduate Education, during 2021-2022, and Bogomolets National Medical University, during 2018-2023, as well as the subjective perception of distance learning by medical PhDs. The scope of the multi-center research was chosen to neutralize factors that may hinder objective research. The participation was voluntary, upon oral consent of the respondents. The results were treated by the Statistica 19.0., and the significance was determined using the Wilcoxon and Student's t-tests.

The study was conducted within the doctoral research framework of L. Lymar, "Developing English academic competence of Healthcare PhD students through distance communication", approved by the Scientific Council of Bogomolets National Medical University on 25.11.2021, protocol № 4.

Results. The English language communicative competence characteristics of the medical PhD students were analyzed, and it was statistically determined that after distance learning, the overall level of the competence improved by 0.3-0.5 points on a 5-point scale. Additionally, medical PhD students expressed positive attitude towards distance learning.

The advantages of distance learning of the medical PhD students, based on a 4-year experience, include: time savings in commuting, absence of classroom space issues, transparency in the implementation of electronic assessment, and increased opportunities for creativity and collaboration. Under the realities of Ukraine, distance learning limited possibility of COVID19 infection, and since 2022, mitigated military threats, with the opportunity to study in safe locations, such as bomb shelters, in a flexible mode. Disadvantages of distance learning for Ukrainian medical PhD students include dependence on the internet connection and electricity supply, and the psychological stress factor, which is not directly related to distance learning, but rather to "learning under and after fire" in Ukraine.

Conclusion. Despite the stressful component of distance learning for medical PhDs, its organization using LMS and online classes has contributed to improved performance indicators and competences, and positive attitude of PhDs to distance learning. The advantages of distance learning include time saving, the absence of classroom space issues, and broader possibilities offered by educational systems. The disadvantages of distance learning are its dependence on internet and power supply, as well as the psychological unpreparedness of some learners and instructors for distance learning.

Key words: Distance Learning; Medical PhDs; COVID19; War with Russia.

Introduction

The effectiveness of medical distance training has traditionally been a contentious issue, with various concerns compared to traditional classroom training [1-4]. The question of how the distance learning format can meet the educational needs of healthcare professionals, particularly in practical skills training, has been examined by numerous educators [5-7]. For example, some authors [8-10] emphasize the importance of simulating practice during distance training following the COVID-19 lockdown, which aimed to replace live practice for medical students.

Simulated classes are considered important aspect of distance medical training, for the development of medical professional competence [11-13]. The need to replicate clinical situations during distance training, referred to as "homeschooling" by Sielicki A. et al. [14], has become apparent [15, 16]. As you can see, considering the current realities, distance training has been introduced into medical education since 2020 [17], including Ukraine. The epidemic situation in the spring of 2020 necessitated legislative regulation of distance education in Ukraine, which was implemented in accordance with a series of

consecutive legislative acts: Resolution of the Cabinet of Ministers of Ukraine "On Preventing the Spread of Acute Respiratory Disease COVID-19 caused by the SARS-CoV-2 coronavirus" No. 211 dated March 11, 2020, Order of the Ministry of Education and Science of Ukraine No. 406 dated March 16, 2020 "On Organizational Measures to Prevent the Spread of the Coronavirus COVID-19," etc. Thus, distance learning for medical professionals was introduced in Ukraine with certain changes or adjustments that varied between different educational institutions and mainly focused on blended format of distance medical education, including postgraduate: some theoretical and non-specialized courses were taught online, while clinical disciplines mostly followed the traditional approach, and some were conducted in a distance-classroom format [18-20].

During the autumn of 2021 and the beginning of 2022, as the epidemic measures were relaxed, most courses returned to traditional in-person instruction. However, the outbreak of Russian military aggression against Ukraine in February 2022 forced a temporary suspension of classes. As a result, distance learning was introduced, in accordance with various regulations, such as the official Letter of the Ministry of Education and Science of Ukraine of March 6, 2022, No. 1/3371-22, which determined the organization of the educational process in the first days of the war. Consequently, the educational process shifted to remote learning, in accordance with various regulatory documents such as the official letter from the Ministry of Education and Science of Ukraine dated March 6, 2022, No. 1/3371-22, outlining the organization of the educational process. Additionally, the Ministry of Education and Science of Ukraine issued Order No. 235 on March 7, 2022, addressing specific aspects of organizing the operation of professional development and higher education institutions, including medical, during the state of war [21, 22]. Therefore, starting from 2020, the training of medical PhDs has been conducted in a distance format. The training of medical PhDs (specialized in surgery, neurology, gynecology, pediatrics, and other branches) aims to develop the professional competencies of physicians, researchers, and academics. It is worth noting that pursuing a doctoral degree in medicine requires a higher medical education [23], thus the issue of acquiring practical skills remotely is not as pressing. However, despite this, the educational process for medical PhDs includes conducting research, clinical work, and academic activities, which are carried out remotely and require adjustments.

Aim

The aim of the article was to explore the peculiarities of distance learning for future medical PhDs, including its organization, main advantages, disadvantages, and challenges, based on the experience of distance education at Bogomolets National Medical University.

Material and methods

In order to determine the effectiveness of distance learning for future medical PhDs, the performance indicators were analyzed based on the study of the discipline "Academic and Medical English for Medical PhD Students" and the development of

English communicative competence. The sample consisted of 247 medical PhD students, aged 21 to 59, who remotely studied the course "Academic Medical English for Medical PhDs" at Kyiv Medical University (group of 28 individuals), Bukovinian State Medical University (group of 39 individuals), Zaporizhzhia State Medical University (group of 32 individuals), Kharkiv Postgraduate Medical Academy (group of 33 individuals) in the academic years of 2021-2022, and Bogomolets National Medical University (group of 318 individuals) in the years 2018-2023. The scope of the multi-center research was chosen to neutralize factors that may hinder objective research. The participation was voluntary, upon oral consent of the respondents.

To assess the effectiveness of the organization of distance learning and the subjective perception of distance learning by medical PhDs, a questionnaire survey was conducted involving 247 respondents. The survey was conducted after completing the course, under the oral consent of all respondents. The participants answered questions related to their progress, difficulties, and peculiarities of distance learning. The questionnaire included the following questions: assessment of the difficulty of distance learning (very difficult, somewhat more difficult than easy, somewhat easier than difficult, and easy), comparison of the difficulty between in-person and distance learning (more difficult, similar, less difficult), amount of time spent on mastering the discipline through distance learning (less time compared to in-person learning, more time, same amount of time), preferred learning format (distance, traditional, undecided), and multiple-choice and open-ended questions regarding the advantages and disadvantages of distance learning for future medical PhDs. The statistical performance indicators were analyzed using the Statistica 19.0 software, and the significance was determined using the Wilcoxon and Student's t-tests.

Results and discussion

Distance learning for future medical PhDs in Ukraine is organized in synchronous and asynchronous formats, utilizing learning management systems (LMS) such as Google Classroom, Microsoft Teams, and Moodle, which are recognized as the most effective systems providing advanced learning simulation capabilities [24-26]. At the Bogomolets National Medical University, medical education at the pre- and postgraduate stages has been conducted since 2020 using the NEURON learning management system based on Moodle. Starting from January 2021, the university implemented the LIKAR_NMU learning management system based on Moodle. In 2023 it offers 2437 courses, including 2416 thematic courses and 21 weekly courses (cycles and preparation for the State Final Certification Exam). Within each course, this system provides access to various learning materials, databases, a glossary of terminology, assignments, classroom training, video resources, lessons, files and folders, forums, and communication with instructors.

The education of future medical PhDs also takes place within the LIKAR_NMU system, following the curriculum's designated courses. The capabilities of

the LIKAR_NMU learning management system are presented in Table 1. The comparative description of the system is provided in Table 2, highlighting its advantages.

The effectiveness of learning is manifested in academic performance and the levels of competence attained. To determine the effectiveness of distance learning for future medical PhDs, performance indicators were analyzed using the example of the discipline "Academic and Medical English for Medical PhD Students," as well as the formation of English language communicative competence. The results of comparing the levels of formation of English language communicative, academic,

and professional competence, along with their components, are presented in Table 3.

Statistically significant differences between the performance indicators of the learners before and after distance learning have been found. The level of attainment in the theoretical, practical, and individual components of English communicative competence, as well as the overall level of English communicative competence, improved by 0.3-0.5 points on a 5-point scale, with minimal decline. Therefore, distance learning, particularly the course on academic and medical English language, contributed to the enhancement of learners' English communicative competence.

Table 1

Capabilities of the LIKAR_NMU LMS system

For future medical PhDs	For teachers
<ol style="list-style-type: none"> 1. Access to and unlimited use of materials. 2. Access to self-check and monitoring tasks, allowing for continuous self-assessment. 3. Flexibility in completing tasks on an asynchronous or synchronous schedule. 4. Reporting through the system. 5. Testing and evaluation with transparent online assessment criteria. 6. Interaction with instructors and consultations. 7. Group collaboration and interaction. 8. Discussion forums for discussions. 	<ol style="list-style-type: none"> 1. Creation and development of course content within the system. 2. Publishing, editing, and updating materials. 3. Monitoring task completion by learners and attendance control. 4. Monitoring performance and analyzing success indicators. 5. Automating document flow processes. 6. Creating and managing groups. 7. Creating virtual classrooms. 8. Receiving feedback

Table 2

Comparison of Functions and Capabilities of Learning Management Systems for Medical PhDs (Microsoft Teams, Google Classroom and LIKAR_NMU)

Functions and Capabilities	LIKAR_NMU	Microsoft Team	Google Classroom
Configuration of access to learning materials	+	+	+
Creation, editing, and updating of courses	+	+	+
Placement of educational content	+	+	+
Assignments	+	+	+
Assessment organization capabilities	+	+	+
Collaboration on documents	+	+	+
Chat	+	+	+
Forum	+	-	-
Wiki	+	-	-
Integration of additional plugins	+	+	+
Course import	+	-	+
Video conferences	-	+	+
Virtual whiteboard	-	+	+
Gradebook	+	+	+
Maximum file storage size	Less than 5 GB	250 GB	15 GB
Video recording	-	+	+

In order to determine the effectiveness of distance learning for the course "Academic English for Medical PhD students," a survey was conducted using a developed questionnaire, in which 247 respondents participated. The obtained results showed a positive perception of distance learning among medical PhDs. Regarding the attitude of future medical philosophy doctors towards distance learning, 63.3% perceive it as normal, while 3.2% considered it very difficult, 15% found it rather difficult than easy, 13% found it rather easy than difficult, and 4.8% found it easy. A comparison of the difficulty between classroom learning and distance learning showed that half of

the respondents (50.2%) consider both distance and traditional learning equally difficult. Regarding the amount of time spent on learning during distance learning, 47% of the group indicated that they spent less time during distance learning compared to classroom learning. Almost the same percentage, 45% of the group, believed they spent the same amount of time. Thus, according to the perception of the learners, distance learning saves time. Regarding the possibility of choosing the learning format, the majority of the group (70% of the group) stated that they would choose distance learning.

The majority of the group (80% of the group),

identified the following disadvantages of distance learning: dependency on internet connectivity and functioning of devices (the survey was conducted prior to November 2022, with notable blackouts in Ukraine), and 35.2% mentioned the absence of live presence in the classroom. To add, 60.3% provided their own variations, which included different options ranging from "no disadvantages" to "lack of live interaction," "psychologically challenging".

When mentioning the advantages of distance learning, respondents pointed out the following: time savings on commuting (90.3% of the group), the ability to better manage their time, improved learning efficiency (71.2% of the group), and better structuring of materials (43.7% of the group). Furthermore, 41.3% of the group also provided their own variations, such as "greater mobility," "opportunity for the development of new technologies," "maintenance of educational quality", etc.

Thus, evaluating their own learning experience in the course of Academic Medical English, the majority of respondents expressed a generally positive opinion about distance learning. They mentioned that they improved their level of knowledge after completing the course and preferred the method of distance learning, if given the option.

Taking into account the nearly four-year experience of distance teaching to future medical PhD students, we will mention the main advantages of such learning: time saving in commuting, absence of classroom space issues, transparency of the electronic knowledge assessment system, greater flexibility and mobility, creativity and collaboration for participants in the process, as well as the psychological aspect: breaking stereotypes. Studies conducted by authors on the peculiarities of distance learning in Western countries have shown a negative impact on the health of learners due to lack of physical activity and the depressive state caused by quarantine changes [27, 28]. But we should emphasize health and life safety of the distance learning process in Ukraine. Unfortunately, the conditions that led to the implementation of distance learning in Ukraine, such as the COVID-19 pandemic and the full-scale military aggression by Russia, are stressful and traumatizing factors that affect medical students and PhD Students [29, 30] more than just

quarantine restrictions. Distance learning has turned out to be beneficial from the preventive viewpoint, as it could prevent COVID19 spread, regarding that some undergraduate and postgraduate students treated COVID19 patients and could be potential carriers, as well as elderly age of some teachers.

Another reality of today's distance education in Ukraine, "Learning under and after fire," including conducting practical sessions a few hours after military shelling, has affected medical education as well. Distance learning mitigates the military threat to participants, providing them with opportunity to study in safe locations, such as bomb shelters, in a flexible asynchronous mode, when the military alarm for Ukrainian students and teachers subsides.

The disadvantages of distance learning for medical PhD students include complete dependence of education on the internet connection, electricity supply, and technical equipment, which particularly hindered educational process during the winter of 2022-2023 due to power outages in the country following Russian infrastructure shelling. Unfortunately, in some regions of Ukraine, including Kyiv, this made any online learning impossible from November 2022 to January 2023 and raised the question of the need for additional alternative sources of electricity and internet, which were provided, in particular, by the Bogomolets National Medical University. In the perspective, some components of the distance learning, even those which at present are synchronic, may become asynchronous in order to manage technical difficulties, related to the Internet and electricity access.

Other problems of distance learning for medical PhD students, particularly in 2020, included the unpreparedness of the methodological base for teaching, uneven distribution of methodological tasks, and a large volume of self-study. The last problem was the unpreparedness of instructors for distance teaching and a significant number of management issues that required experience in distance training. At the same time, it is worth noting the academic advantages of distance learning for future medical doctors of philosophy, confirmed by their performance indicators, particularly in the study of the communicative course of academic and medical English.

Table 3

Comparison of the levels of formation of English language communicative, academic, and professional competence after distance learning-

Comparison of the medical PhD students' performance by t – Wilcoxon and t - Student						
	Mean mark before learning	Mean mark after learning	Improved performance, %	Deteriorated performance, %	Same performance, %	Reliability
Theoretical component	3,67	4,08	91 (+38,8%)	4 (-1,6%)	152 (61,5%)	0,001
Practical component	3,75	4,21	110 (+44,5%)	2 (-0,8%)	135 (54,65%)	0,001
Individual component	3,75	4,35	142 (+57,5%)	0 (0%)	105 (42,5%)	0,001
Overall level	3,73	4,22	209 (+84,6%)	2 (-0,8%)	36 (14,6%)	0,001

Conclusion

Medical undergraduate and postgraduate training in Ukraine were interrupted by the COVID-19 outbreak in 2020-2021 and the Russian war actions in 2022. Thereby, the new measures were implemented for the education of medical PhD students. In Ukraine, distance training for the medical PhDs was conducted using various LMS such as Google Classroom, Microsoft Teams, Moodle, and LIKAR_NMU, the proprietary system used by the Bogomolets National Medical University.

The performance characteristics of medical PhD students of the distant "Academic Medical English" course was analyzed, and statistically significant findings revealed that after distance learning, the overall level of English communicative competence improved by 0.3-0.5 points. Additionally, personal questioning of the medical PhD students showed that the majority perceive distance training as normal. A four-year experience of distance teaching medical PhD students revealed its following

advantages: no commuting problems, time saving, absence of classroom space issues, transparency in the implementation of the LMS control, greater flexibility and mobility, increased opportunities for creativity and collaboration, flexibility and mobility for all participants, and psychological breaking stereotypes.

The disadvantages of distance education for medical PhD students include the absolute dependence of education on the state of internet connection, electricity supply, and the functioning of technical equipment, as well as the low preparedness of some instructors and learners for this mode of learning. It is also worth mentioning the psychological stress factor, which is not directly related to distance learning but rather the "learning under and after fire" situation, which is a stress-inducing factor.

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ДИСТАНЦІЙНА ОСВІТА ДОКТОРІВ ФІЛОСОФІЇ-МЕДИКІВ ЗА УМОВ COVID19 ТА ВІЙНИ З РОСІЄЮ: НОВІ РЕАЛІЇ

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Резюме

Вступ. Пандемія COVID-19 в 2020-2021 та повномасштабні військові дії росії у 2022, мали значний вплив на додипломну та післядипломну медичну освіту в Україні, зокрема на «навчання під час та після обстрілів». Незважаючи на всі виклики, дистанційне навчання майбутніх докторів філософії-медиків довело академічні переваги.

Мета дослідження – визначення особливостей дистанційного навчання майбутніх докторів філософії медиків, включаючи його організацію, головні переваги та недоліки, та виклики.

Матеріал та методи дослідження. Для визначення ефективності дистанційного навчання майбутніх докторів філософії – медиків, були проаналізовані показники успішності вибірки 247 майбутніх докторів філософії-медиків, віком від 21 до 59 років, які вивчали курс «Академічна та медична англійська мова для майбутніх докторів філософії - медиків» на базі ПВНЗ «Київський медичний університет», Буковинського державного медичного університету, Запорізького державного медичного університету, Харківської медичної академії післядипломної освіти в 2021-2022 н.р., та Національного медичного університету імені О.О. Богомольця в 2019-2023 н.р, а також проведено опитування для визначення суб'єктивного сприйняття дистанційного навчання здобувачами. Багатоцентровість дослідження обрана з метою нейтралізації географічних факторів. Участь в дослідженні добровільна, за отримання усної згоди респондентів.

Статистичний та математичний аналіз показників проведено за допомогою програми Statistica 19.0, визначення статистичної значимості проводилось з використанням тестів Вілкоксона і Стьюдента.

Дослідження було проведено в рамках докторського дослідження Л. Лимар "Розвиток англомовної академічної компетентності майбутніх докторів філософії галузі "Охорона здоров'я" засобами дистанційного зв'язку", схваленого Наковою Радою Національного Медичного Університету імені О. Богомольця 25.11.2021, протокол № 4.

Результати дослідження. Дистанційне навчання медиків в Україні здійснюється в синхронному, асинхронному та змішаному форматах, із використанням систем управління навчанням Google Classroom, Microsoft Teams, Moodle, та в НМУ імені О.О. Богомольця -LIKAR_NMU. Проаналізовано показники англомовної комунікативної компетентності майбутніх докторів філософії - медиків, сформовані протягом дистанційного навчання. Визначено статистично, що внаслідок дистанційного навчання, загальний рівень англомовної комунікативної компетентності покращився на 0,3-0,5 бали за 5-бальною шкалою. Також показано позитивне відношення опитаних здобувачів до дистанційного навчання після курсу.

Визначено переваги дистанційного навчання: економія часу, відсутність проблеми аудиторного фонду, прозорість системи електронного оцінювання, розширені можливості співпраці. Дистанційне навчання сприяло обмеженню поширення інфекції COVID19, а з 2022 - обмеженню ризиків, пов'язаних з військовою агресією росії. Недоліки дистанційного навчання для майбутніх докторів філософії-медиків включають абсолютну залежність навчання від інтернет з'єднання, електропостачання та роботи технічного обладнання.

Висновки. Дистанційне навчання майбутніх докторів філософії медиків сприяло покращенню показників успішності та компетентностей, та позитивному ставленню здобувачів до дистанційного навчання. Переваги дистанційного навчання включають економію часу, відсутність проблеми аудиторного фонду, можливості освітніх систем, та медичну і військову безпеку українських здобувачів освіти. Недоліками дистанційного навчання є залежність від електропостачання, інтернет зв'язку, а також психологічна неготовність учасників процесу.

Ключові слова: дистанційне навчання; доктори філософії-медики; COVID19; війна з росією.

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