

# Wiadomości Lekarskie Medical Advances



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Memory of  
dr Władysław  
Biegański

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## REVIEW ARTICLE

# FEATURES OF THE PROCESS OF TRAINING IN EDUCATIONAL MEDICAL INSTITUTIONS OF UKRAINE AT THE PRESENT STAGE. PART I. ATTITUDES OF STUDENTS AND UNIVERSITY TEACHERS TOWARDS DISTANCE LEARNING

DOI: 10.36740/WLek202309130

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## ABSTRACT

The review article reflects the results of the assessment of data from individual research papers and personal observations, as well as data from domestic and foreign literature, as well as own opinion about the features of the training process in educational medical institutions of Ukraine at the present stage. First, the COVID-19 pandemic, and then martial law in the state, caused distance learning to become an inseparable component of modern education and contributing to the effective implementation of the educational process in general and the achievement of high quality results in medical educational institutions in particular. For the successful implementation of the e-learning system, all participants in the educational process need the help and assistance of special technical support services. Therefore, universities need to pay more attention to improving technical support of platforms and academic interaction between teachers and students [1]. Universities that have been able to provide such support have avoided many problems in the transition to distance learning. Practical and clinical skills are essential in the field of medicine, and the lack of opportunities to master and practice these skills could potentially lead to a generation of insecure doctors with limited experience of meeting and examining real patients [2]. Therefore, the task of teachers at the present stage is to do everything possible to prepare competent specialists adapted to the realities of life.

**KEY WORDS:** educational medical institutions, medical students, COVID-19 pandemic, martial law, distance learning

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## INTRODUCTION

The COVID-19 pandemic, and the public health measures that followed, the war conditions in the country have challenged medical universities and their traditional teaching concepts.

The COVID-19 pandemic has affected all areas of life, including education. According to some reports, in early April 2020, 170 countries closed their higher education institutions. About 1.7 billion students and students were unable to attend universities and schools, comprising 90% of the total number of all students on the planet [3]. The COVID-19 pandemic and the state of war have led to isolation, social distancing, and work from home, making online classes part of the lives of teachers and students.

At the present stage, online education has become an academic norm. Today, many universities maintain, to one degree or another, a distance learning format. This contributed to the organization of the educational process in the conditions of war. A certain part of students

and teachers are in dangerous zones – in the territories of warfare or temporarily occupied territories and do not have the opportunity to join it. Conversely, there are students and teachers who are relatively safe, but do not have access to the Internet or do not have technical means. Every day (several times a day in some cities) in most regions of Ukraine, an air alert is announced, requiring residents to go to a shelter. And this directly affects the organization of the educational process [4]. In addition, such factors as the loss of material and technical base by some educational institutions have a negative impact; individual psychological state of a person during the war (combat operations, missing persons, wounded, dead, etc.); evacuation of some students and teachers, mobilization of direct organizers of the educational process, active volunteering of teachers and students. In order not to worsen the quality of education in medical universities, it is desirable to minimize the influence of these factors on the educational process [4].

It is generally recognized that the situation has become a serious test for the entire education system as a whole. There is uncertainty about how long this situation will last, and there is growing recognition that there may be periods in the future when quarantine and social distancing may be required again [5]. Based on the opinions of experts, it can be said that recovery from the pandemic may take several years, and given the military situation in Ukraine, this period will be even longer.

## THE AIM

To characterize the learning process in educational medical institutions of Ukraine at the present stage

## MATERIALS AND METHODS

This article presents an assessment of more than 70 world literary sources published in the period from 2020 to 2023, which discuss the issues of distance learning process at medical universities. The study involved an evaluation of literary sources included in the PubMed, Google Scholar databases.

The assessment employed data from sociological studies on the attitude of students and teachers of universities to distance learning, conducted by expert organizations during the pandemic, analytical and information materials of universities, bibliographic sources. Secondary analysis and interpretation of the results of sociological surveys, systematization and classification of the theoretical and factual materials used, analysis of management practices and experience of universities in the conditions of extreme transition to remote mode were carried out.

## REVIEW AND DISCUSSIONS

In order to support medical education, it has become necessary for medical schools to transit to online learning as the main means of delivering the curriculum. In many countries, the experience of teleworking and studying has shown that the system of higher education faces a number of challenges. Some of them are related to problem areas that existed even before the pandemic, which became more aggravated after its onset and aggravated during martial law. Others are new tasks and points of growth.

Many researchers believe that the educational practices established during the pandemic cannot be referred to as well-planned and built, high-quality online learning. The new phenomenon is called Emergency Remote Teaching and Learning 2 or Emergency Remote Teaching (ERT). ERT is not a full-fledged equivalent of

either full-time or distance education [6]. If the goal of online learning is to recreate a complete educational environment, then ERT is a temporary transition to an alternative teaching format due to an emergency.

In the course of the study, 5 main challenges were identified that most universities face, namely: time constraints, emotional tension and stress, communication difficulties and lack of communication, technical and technological problems, and development of practical skills.

## CHALLENGES

### TIME LIMITS

Due to the need for a quick transition to a remote format, significant difficulties arose with the launch of online training programs in the shortest possible time. Although the process of digital transformation of higher education began several years ago, the pandemic has accelerated it, leading to fundamental changes in a matter of weeks. However, due to the developed state of war in Ukraine, it became necessary not only to continue teaching, but also to work on transferring educational content and materials to the online space, mastering new forms of education, as well as involving and motivating students.

Teachers had to quickly adapt to new online methods, in some cases with little to no training and in record time. This transformation was a hasty and forced circumstance.

The sudden shift to the use of online learning on a large scale led to inconsistencies with curricula [7], which in turn had to be urgently changed to make up for lost hours that were not spent in classrooms, laboratories [8] or at the bedside [9].

The situation was also complicated by the fact that the process of transition to online learning, both in the case of a pandemic and a state of war, did not happen at the beginning, but in the middle of the semester. Time constraints have raised serious concerns about the successful completion of the academic year and guarantees that students would receive their scheduled academic credits. Conducting examinations, as well as planning for the next academic year and next semester, taking into account failures of the academic schedule, plans and procedures, was a major challenge. In some cases, the difficulties in organizing and conducting a distance educational program related to desynchronization of the study group due to the difference in time zones, with some students relocating abroad, or a general lack of time due to increased work and study load.

Remote mode did not reduce the teacher workload as expected by upscaling or reusing teaching material.

On the contrary, the workload has increased due to the need to check, monitor learning progress and give feedback. And this despite the fact that teachers and university staff have already tried to balance teaching, research and official duties, not to mention the balance between work and personal life. In addition, teachers had to prepare and conduct classes from home with all the practical and technical problems associated with this, and often without proper technical support [6].

Degree seekers, as well as educators, have faced difficulties and challenges in adapting to the abrupt and unplanned transition to online learning. To a greater extent, this concerned the problems of independent organization of study time, higher requirements for self-motivation and self-discipline [10], and was also associated with the need to master a variety of skills, competencies and resources in a short time [11].

The sudden increase in workload was mainly due to students increasing their own efforts to catch up with modules without the personal support they previously had from mentors and teaching assistants, proving their involvement to their tutors by completing more assignments than were previously required [12].

It can also be noted that during the period of martial law, for junior students of medical schools, a certain complexity of self-organization was compensated by the relative ease of the material of general educational disciplines, in senior courses, the greater volume and complexity of the educational material was compensated by the already formed learning skill, the ability to use the accumulated and systematize the newly received knowledge.

Although problems with workload at universities are explained by the difficulties of adapting to new study habits [13], they can also be explained by problems with well-being – a state of chronic stress, fear for one's life and the lives of significant others [14].

One of the consequences of the high level of workload was an increased risk of emotional burnout for teachers and students.

### *EMOTIONAL TENSION AND STRESS*

The pandemic, the war and, as a result, forced distancing have affected the emotional, psychological and social well-being of both teachers and degree seekers.

The medical school education period is seen as a critical period of time when education seekers transition from late adolescence to adulthood. This is an extremely sensitive stage of life, gotten associated with emotional problems and mental disorders. In addition, this period is accompanied by a significant increase in risky health behaviors. It is obvious that in a situation

of a pandemic, and even more so a state of war, these patterns are exacerbated.

In the world, the problem of the psychological well-being of students is actively studied through such topics as the psychological health and inequality of students, the relationship of physical and mental health with the academic performance of students, mental disorders, suicidal thoughts and related behavior, the impact of anxiety and academic stress on academic success, gambling addiction among students, depression among students, etc.

Stress, anxiety, and anxiety about contracting coronavirus and changing mental health were also noted in a quantitative and qualitative study conducted among public university students in the United States [15].

Several studies highlight the negative impact of homeschooling on the emotional well-being of students not accustomed to distance learning and report several causes and outcomes. For example, students' well-being problems have been found to be positively associated with inappropriate learning environments [13, 14], feeling overworked, being overly concerned about their academic achievements, losing a job [14], career problems [16, 17], concerns about physical health [12].

Students noted a lack of motivation, difficulty concentrating and asking questions. Part of this may be due to the lack of interaction with friends and colleagues, which leads to increased anxiety [7].

In addition, students who already experienced financial problems were more likely to develop depression and anxiety [16], postpone graduations, and change career preferences [17].

The negative psychological consequences of distance learning during the COVID-19 pandemic and exacerbated during martial law cannot be ignored. A significant increase in the volume of homework in many disciplines studied by students against the background of self-isolation, limited space, inactivity, a constant feeling of anxiety and fear for life, leads to a deterioration in psychological and physical health, regardless of the country, level of training and income level. These problems are of great concern and urgent support may be needed to mitigate them.

### *COMMUNICATION AND LACK OF COMMUNICATION*

The transfer of educational process to online environment is associated with a change in communication practices. Oral synchronous communications (classrooms, exams, consultations, informal "live" communication) predominate in classical full-time education. In distance learning, the volume of written asynchronous

communication is increasing (independent study of educational literature and other educational content, completion of written assignments followed by written feedback from teachers). The online format reduces the opportunities for emotional exchange and flexible response that are inherent in face-to-face oral communication.

This inevitably leads to communication losses, such as the lack of immediate response and reactions from students when discussing the topic, as well as limited opportunities to directly address the teacher with a question (during or after class). 64.7% of teachers complained of "discomfort of speech", the feeling of "talking into the void" when lecturing (especially when the cameras are turned off) [18]. The group dynamics inherent in face-to-face classes do not replicate well in an online environment.

Such communication "hindrances" make it difficult to involve students in the learning process, have a negative impact on communication between teachers and students, and reduce its effectiveness.

More than half of students note the lack of face-to-face communication with teachers and fellow students as the main difficulty in organizing distance learning. In many of the studies that have been conducted, students describe feelings of isolation from their instructors, from course content, and from their fellow students.

Separate studies among Norwegian and Malaysian students show that 69.6% of students had a limited opportunity to interact with lecturers, and 62.7% had poor communication with lecturers and other students [19].

In terms of individual barriers, 74.1% of students were not motivated to study online, 71.5% could not study as well as in the classroom, and 58.2% did not agree to take online courses in the future [19].

Video webinars (for example, on the Zoom platform, Meet), as close as possible to the format of face-to-face classes, did not provide the same quality of contact and full-fledged interaction of participants in the educational process as face-to-face classes. Some students find it difficult to adapt to the new format. Almost a third of the students felt embarrassed and uncomfortable when the teacher asked to turn on the webcam. The students name such limiting factors that did not allow them to fully participate in the educational process as poor Internet connection; the session being recorded; not wanting their classmates to be part of their personal space; features of the home environment; appearance, etc. During martial law, constant and prolonged air raids are also a very strong limiting factor, which not only makes it impossible to take part in classes, but also to assimilate the material provided in full. Although, in turn, the students felt that the teachers were mainly

engaged with students who had the camera turned on. 35% of students find it difficult to ask questions to a teacher online, they preferred to remain silent [20] and did not want to directly and openly share their views. Some students, using their invisibility, simply avoided answering questions. Also, students had a high threshold barrier for sending questions to the teacher by e-mail.

Most consider online seminars with a teacher via video link to be the most effective form of distance learning. The attendance of such classes is higher. A small number of students called the online lecture format effective [21]. About half of the students preferred lectures "on record", but at the same time, noting that lectures should not last more than 45 minutes [22].

Online classes also place limits on providing feedback, posting follow-up questions during or after class, and asking for clarification on learning issues. Most students believe that the use of online distance learning classes threatens effective communication between group members, especially between those who do not know each other. Some participants also expressed concerns about the difficulty of obtaining basic contact information from their fellow students. Even students who have previously collaborated may find it difficult to meet and not have timely and in-depth communication and discussions, unlike regular classroom sessions. At the same time, communication in social networks does not compensate for "live" communication [23].

Teachers also talk about the lack of effective interaction between students during discussions in online classes. In particular, they do not have strong evidence of whether their students actively participate in virtual discussions. According to the results of separate studies, 81.2% of teachers complained about the difficulty in assessing the degree of attention of students due to the lack of direct eye contact "face to face". A decrease in interaction with students during classes were reported by 65.9% of teachers, and noted the distracting effect of the online environment [18].

Under normal circumstances, as students are in the active learning stage, they seek some awareness or social presence in their learning environment, even in online classrooms. Students need clear social positions and identities in relation to other students. In the conditions of life on campus, they can participate in various activities, actively interact in student communities. University students who interact more with each other have high academic self-efficacy.

Teachers of older generations, theoretically the most experienced and competent in their professional field, turned out to be the least ready to use digital technologies in the educational process, adapt educational and

methodological tools and build communication with students through Internet services, neither during classes nor outside (via e-mail, instant messengers, etc.) [24].

Not all teachers had the skills and competencies of virtual interaction, the ability to work productively and involve others in the work. In online classes, teachers had difficulty engaging students in discussions. As a rule, only 15–20% of those present took part in the discussions [24].

In addition, in distance learning, teachers have encountered the fact that it is impossible to guarantee academic integrity. And proctoring was not very effective in this. With remote testing, it is difficult to solve problems with identification, unauthorized use of textbooks, preventing the use of devices (for example, phone, Bluetooth). In one survey, 73.6% of students found it easier to cheat on online exams than on regular exams. [25]. And this is despite the fact that in medical education, erroneous decisions on exams can have detrimental consequences for patients and high-quality treatment.

All this testifies to the difficulties of changing the formats of learning, verbal and non-verbal communication among the participants in the educational process. Lack of effective communication is one of the biggest limiting forces for organizational educational activities. There is a relationship between the communicative climate and learning productivity. Traditional educational practices, design and components of the educational process (types and forms of training sessions, knowledge testing, etc.) in the online environment are losing their effectiveness and require adaptation.

### **TECHNICAL AND TECHNOLOGICAL PROBLEMS**

The main challenges in adapting to online learning have been technical issues that need to be addressed as they may create an obstacle to the adoption of the online learning system by many students.

While appropriate digital infrastructure and platforms are required for the successful implementation of online learning, poor internet access combined with a lack of laptops and computers has become a major barrier for most students.

For example, according to studies, 66.4% of students in Malaysia [19] and 61% in India faced problems with Internet access. In more developed countries, this percentage was much lower, for instance, 21.5% in the UK, 15% in Finland [7, 26].

In some cases, poor Internet access has led to decisions to suspend or cancel academic activities, and has also made it difficult to provide students with equal

learning opportunities, even in middle- and high-income countries [27].

Not all students have devices that provide the full range of features needed in the learning process. The vast majority of students own the electronic devices required for online learning (97%) and are willing to invest in such devices (74%). The majority of participants preferred a computer (79%), a smaller number preferred a tablet (20%), and only a very few used a smartphone (1%) [28].

Despite this, a significant part of the students still experience problems with the acquisition of the necessary technical means. For example, according to one study, 38.6% of students agreed with the difficulties in purchasing a computer or laptop [19]. This is especially true for families with two or more children, whose financial resources are limited. Often, students did not have enough work space at home to organize their studies.

The inequality of individual technical and everyday capabilities of the main participants in the educational process, i.e. teachers and students, depending on which their access to educational resources and the quality of the educational process turned out to be, was aggravated by the inequality of the technical capabilities of the universities themselves. Even universities in countries with good internet connectivity report financial difficulties in investing in tools and online licenses [27].

Based on this, distance learning may not reduce, as expected, but rather increase the digital gap.

Moreover, students with fewer opportunities (for example, lack of digital or inappropriate equipment, lack of Internet or slow connection) and poor digital skills are likely to be more affected by online learning, which will increase existing inequalities [29].

In addition, the transition to online learning has probably exacerbated the inequality between universities with different levels of development of educational technologies.

The technologies most commonly used by universities to support online learning during lockdown are the university web platform; instant messaging tools (WhatsApp, Telegram); video conferencing tools (Zoom, Skype, Google Hangouts, Google Meet); educational applications (Google Classroom); as well as e-mail and telephone conversations to maintain individual contact with students. The most widely used platforms are GoToMeeting, Skype and Zoom [30]. In general, other technologies (CiscoWebEx, GoToMeeting, Microsoft Teams, Monosnap, Loom, OBS, etc.) have also proved to be useful.

It can be assumed that the most commonly used educational technologies are tools for synchronous collaboration with a high potential for simulating face-

to-face communication. This is especially true for video conferencing. Most likely, this can be explained by the desire to recreate the situations of communication and interaction that occur during face-to-face classes on campus.

But the solutions used were not originally intended for educational purposes and, in the process of application, created additional problems in turn.

For example, the introduction of such software as Zoom and Microsoft Teams has exposed many privacy and data security issues. Some of this software collects and uses data, tracks meetings, sometimes without the knowledge of participants, and uses this data to provide personalized ads to users. In this regard, some universities announced the abandonment of the Zoom platform and the transition to GoogleMeet or other applications. There was such a phenomenon as Zoom bombing, which characterizes actions related to the violation of online spaces, including hacking virtual classrooms [31].

Digital education requires universities to have the appropriate infrastructure and technological platforms, reliable servers that can withstand virtual workloads, and methodological training of teachers and students for online delivery using all available technical and educational resources.

Work in remote mode showed a high degree of differentiation of universities in terms of the level of adaptation to pandemic realities and the realities of martial law and the danger of stratification of universities according to the degree of their involvement in distance education.

Before starting to work remotely, most higher education institutions did not have the infrastructure to deploy full-fledged distance learning. There was no high-speed access to the Internet and there were no specialized data storage systems to accommodate information systems. The load on university websites, information systems and databases has increased significantly, which has led to instability and failures in their work.

Learning management systems (LMS) (for example, Blackboard, Moodle), which were already used in most higher education institutions, facilitated attendance, student registration and content distribution, testing and assessment management, but were practically not used to organize full-fledged virtual classes, administration or monitoring [32].

It should be noted that some university professors have already used distance formats for teaching students in their practice. This to some extent facilitated the transition to new working conditions. The results of separate studies showed that the majority of teachers

(70%) were ready to choose online classes for curriculum management [33]. In turn, 64.2% of educators cited technical issues such as poor connectivity, power outages, broadband issues, and poor audio and video quality as the main disadvantages of online classes, indicating that they do not prefer online learning [34].

Compared to classroom learning, online learning requires higher basic computer skills, such as good knowledge of computer technology, proper handling of various teaching and learning tools, knowledge of available platforms and services for remote learning, their functionality, and the need to quickly solve specific problems during training sessions [35].

Thus, the general level of digital literacy of students, the availability of communication skills in social networks can become the basis that will allow students, with appropriate technical capabilities, motivation and assistance from teachers, to quickly master distance learning technologies, which will positively affect both the attitude of students to these technologies, as well as the quality of education.

### *PRACTICAL SKILLS*

Medicine is a discipline with a high degree of practicality

Despite the high demand for online learning among medical students, there are parts of medical education that seem inappropriate for online learning.

Medical education differs from other types of education in that it is not possible to fully master practical and clinical skills in a distance form, and training is traditionally carried out full-time.

Face-to-face clinical education, with its dynamic interaction between students, patients, and doctors, contributes to the formation of the necessary clinical skills and professional behavior [36], which cannot be formed by online distance learning.

Clinical practice is a significant part of the training of future doctors, the most important exams are also taken in clinics. The inability to attend medical institutions has called into question both the practical training of students and their official certification, which can negatively affect employment prospects [37].

Acquiring clinical skills remains a significant barrier to online learning. For example, studies conducted in the UK and Germany show that 75.99% of medical students believe that online education has not been able to successfully replace the clinical education they received through direct contact with the patient, while 82.17% reported that they cannot learn practical clinical skills through the online learning mode. 91% of students indicated that they would like to continue their education with real patients [7, 21].

Under conditions of forced distancing, the only real opportunity for medical students to gain practical experience is voluntary visits to medical institutions. However, it does not provide knowledge and skills beyond a particular specialization [38].

The specificity of medical education is such that most of the clinical competencies of the future doctor being formed are inextricably linked with forms of training that require personal presence, these are, first of all, communication skills and practical manipulations. In addition, teamwork is fundamental to health care. Removing face-to-face clinical rotations from the training program potentially threatens the development of key teamwork skills.

At the stages of clinical medical education, there is a greater need for experimental and clinical practice than at the stages of general and basic medical education [39]. Practical skills acquire a complex structure and require not a mechanical demonstration of the skill, but, to a greater extent, the ability to recognize, interpret, and analyze the data of the clinical situation. Visualization plays a key role in the acquisition of knowledge by the future doctor. It is impossible to imagine the study of anatomy without working in dissection, histology without working with microspecimens, surgery without monitoring operations, etc.

Through observation, practice, and repetition under the guidance of experienced clinicians, medical students also acquire the necessary clinical skills for patient care, which are an integral part of a doctor's daily practice.

Building relationships with the patient, the use of patient-oriented communication skills correlates with the effectiveness of the doctor's professional activities, psycho-emotional well-being and job satisfaction, and also affects the patient's well-being and health.

In addition, despite the positive effect of internships, in a number of cases, a student who is faced with the realities of his future specialty has negative emotions, frustration, a decrease in the level of motivation up to refusal to study in this program. At this stage, it is very important to help the student adapt, reduce stress levels and stabilize psycho-emotional perception. Therefore, human interaction is extremely important for medical practice [40].

In turn, the lack of tactile awareness and practical instruction can hinder the learning of complex practical skills [1].

## CONCLUSIONS

The situation with the pandemic, and subsequently with martial law, developed so quickly and was so unprecedented that no one had the opportunity to use someone else's experience to overcome the problems associated with the need for self-isolation. Universities from different countries, regions and cities had to make their own decisions about the conduct of the educational process. Therefore, it is necessary to compare and analyze the world and our own experience in conducting distance learning in order to develop an individual strategy for universities on this issue.

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