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Quality control of educational process in the lyceum of medical profile when learning in distance mode during the COVID-19 pandemic

Control de calidad del proceso educativo en el liceo de perfil médico cuando se aprende en modalidad a distancia durante la pandemia de COVID-19

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Abstract

With the spread of the COVID-19 coronavirus infection pandemic and, as a result, the relevance of the transformation of curricula, many subjects of the education system have now switched to distance learning. Ukrainian Medical Lyceum of the National Medical University named after A.A. Bogomolets actively and successfully implements this format. The adaptation of the curriculum of the medical lyceum to the changed conditions takes into account the updated requirements. The study is devoted to the analysis of the perception of changes introduced by distance technologies in the educational process, and the possibilities of controlling its quality using the example of training in a medical lyceum. The collection of data for analysis was carried out using a questionnaire. In the course of the survey, which was answered by 187 respondents. The study examined in detail the advantages and disadvantages of learning on online platforms. It was concluded that new teaching methods require updated quality assessment methodologies, and that the greatest obvious benefit of online learning is adaptability and variability.

Keywords: distance learning, quality control of education, medical education, online platforms, pandemic COVID-19.

Resumen

Con la propagación de la pandemia de la infección por el coronavirus COVID-19 y, en consecuencia, la pertinencia de la transformación de los planes de estudio, muchas materias del sistema educativo han pasado a la enseñanza a distancia. El Liceo Médico Ucraniano de la Universidad Médica Nacional que lleva el nombre de A.A. Bogomolets aplica activamente y con éxito este formato. La adaptación del plan de estudios del liceo médico a las nuevas condiciones tiene en cuenta los requisitos actualizados. El estudio está dedicado al análisis de la percepción de los cambios introducidos por las tecnologías a distancia en el proceso educativo, y las posibilidades de controlar su calidad utilizando el ejemplo de la formación en un liceo médico. La recogida de datos para el análisis se llevó a cabo mediante un cuestionario. En el transcurso de la encuesta, a la que respondieron 187 encuestados. El estudio examinó en detalle las ventajas e inconvenientes del aprendizaje en plataformas online. Se llegó a la conclusión de que los nuevos métodos de enseñanza requieren metodologías de evaluación de la calidad actualizadas, y que la mayor ventaja evidente del aprendizaje en línea es la adaptabilidad y la variabilidad.

Palabras clave: aprendizaje a distancia, control de calidad de la educación, educación médica, plataformas en línea, pandemia COVID-19.

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Introduction

After the start of the spread of the coronavirus infection SARS-CoV-2 in 2019 (COVID-19), WHO declared COVID-19 a global pandemic. The state strategy aimed to introduce isolation restrictions to improve the safety of the population, control the spread of infection and “smooth curve”, and this influenced all aspects of life, including the activities of the education system inevitably affected medical education at all levels of continuous training - lyceum, college, university, additional medical education and the system of advanced training - due to the impossibility of conducting full-time classes: lectures, practical classes, exams, internships, clinical practice, etc. (Sandhu & de Wolf, 2020). Recently, online learning methods have increased their share in medical education, in some of its areas having taken an almost key role and demonstrated an advantage for mastering professional competencies. The educational system of Ukraine, in its desire to integrate with the educational space of the European Union, is studying the experience of countries actively introducing modern technologies of distance learning in the digital environment (Pata et al., 2021). The survey showed that face-to-face traditional offline classroom learning and online learning via Internet platforms and videoconferences (e.g., Zoom, Google Meet, Skype, etc.) are quite comparable in terms of exam results and may in some cases be considered equivalent. We used developed and adapted digital solutions that support many types of educational activities, incl. studying, summarizing and discussing teaching materials, passing adaptive formative testing and various forms of interaction between students and teachers (Marin et al., 2021).

Research Problem

In a pandemic, distance education using the capabilities of online platforms is the preferred way to ensure the safety of the health of all participants in the educational process. Distance learning is today one of the most promising areas for improving the professional skills of specialists in the education system, and one of the factors for improving the quality of education. Distance learning is a new organization of the educational process based on the principle of independent student learning (Obidjonovna, 2021; Abdukhafizovna, 2021). On the one hand, modern Internet resources provide interactivity and multimedia support for the educational process, control of the assessment of the cognitive activity of students (Parker, 2020).

Internet technologies allow the teacher to conduct training without being close to the students, to use resources for distance learning, creating conditions for the full assimilation of the material. The problem of assessing the quality and effectiveness of online distance learning and the means of improving them, as well as the means of assessing the educational process (Favale et al., 2020; Ganajová et al., 2021), including in medical lyceums of continuing medical education in the future, has not been sufficiently studied (Altwaijry et al., 2021; Kerres, 2020; Tuma et al., 2021).

Research Focus

In the medical lyceum, as a link in the unified system of continuing medical education, this problem is especially acute, since the quality of education has a remote influence on the subsequent stages of vocational training. The study focuses on such important aspects for assessing quality as: implementation, practical experience, the alleged advantages and disadvantages of online distance learning during the COVID-19 pandemic. The unprecedented pandemic has sparked a sudden shift towards predominantly distance learning with proven and innovative online capabilities that have become a major source of medical education and allowed students to continue their education distance learning. However, while the benefits of blended learning (online, in addition to traditional offline) have been demonstrated, for example, in areas such as self-study, information gathering and abstract writing, especially among a generation accustomed to using YouTube to watch instructional videos (Sandhu & de Wolf 2020), there is still a lack of research, limited understanding of exactly how online learning affects the quality of the educational process, and its use in the practice of medical education at the lyceum level (Sofianidis et al., 2021; Wasfy et al., 2021). Internet platforms and the reality of digital health will remain an integral part of medicine, both for patients and for students (students of medical lyceums and colleges, university students, further education doctors) - even after overcoming the COVID-19 pandemic (Ahmed et al., 2020; Rose, 2020). Thus, a deeper understanding of the advantages and disadvantages of distance learning in the system of continuing medical education, monitoring the quality of education will improve the effectiveness of online teaching. Therefore, we aimed to explore how students' perceptions of the effectiveness of online learning can contribute to

the learning process and improve the quality of education at a medical college during the COVID-19 pandemic. Improving this understanding as a factor in improving the quality of education can help in the development of updated curricula of institutions of the continuing medical education system in the future.

Research Methodology

General Background

Design - a cross-sectional study conducted at the focus group level of medical college students using a questionnaire survey. The questionnaire was developed after a preliminary analysis of scientific literature on modern methods of online learning and the impact of isolation due to the COVID-19 pandemic on the educational process and the system of continuing medical education. The questions about student perceptions of the educational environment were formulated based on the Dundee Ready Educational Environment Measure (DREEM), a robust and proven tool that is a general guideline for medical students. DREEM is an authoritative questionnaire designed to measure the quality of the health education environment at all levels. DREEM is a basic research tool for medical institutions around the world. It was considered appropriate to adapt it for monitoring the assessment of the quality of education in a student-centered medical college. The response options were formulated on the basis of a qualitative Likert scale of 5 items, ranging from “strongly disagree” to “strongly agree” through evaluative

interim options. The rest of the questionnaire questions were not formalized and left a margin for the expression of subjective assessments. Text responses were collected into groups, distributed according to thematic semantic categories and analyzed. The last questions focused on the following four topics:

- General demographic status (gender, age, lyceumgrades).
- Use and experience of online learning during the COVID-19 pandemic.
- Perceived advantages and disadvantages of online learning.
- Assessment of the quality of the educational process

The questionnaire was circulated to the students of the Medical Lyceum and responses were given within a period of 2 weeks (from April 2, 2020 to April 16, 2020).

Sample / Participants / Group

182 students of the medical lyceum for 4 years of study (grades 8, 9, 10 and 11) took part in the study by answering the questionnaire. The academic level of the students was assessed as roughly equivalent. Participation was voluntary. All survey participants were informed prior to the start of the survey that the collected data would be confidential and used only for research. Among the respondents there were 124 female participants (68.1%) and 63 male participants (31.9%). The data are presented in Table 1.

Table 1.
Demographic data of the students who took part in the survey

Demographic indicators		Number of students and share in the sample n%
Gender	male	124 (68.1 %)
	female	63(31.9 %)
Lyceum grades (year of study)	8	45(24.0 %)
	9	30 (16.0%)
	10	54 (28.9 %)
	11	58 (31.1%)

Statistical markers: gender, lyceum gradesfor sample size (n = 187)

Instrument and Procedures

The data obtained as a result of the questionnaire was exported to Microsoft Excel (Excel 2019), which was used to create illustrative histograms and calculate descriptive statistics of formalized responses to questionnaires to identify statistically significant patterns.

Data Analysis

Methods of descriptive nonparametric statistics were used to analyze the data. Wilcoxon signed-rank test and Mann-Whitney U-test were used to compare the time spent on online learning (in astronomical hours) between periods before and during self-isolation for quarantine due to

COVID-19. P values <0.05 were considered statistically significant.

Research Results

Before the pandemic and the start of the introduction of distance learning in self-isolation, students of a medical lyceum responded in a survey that they spent an average of 4 to 6 hours a week using Internet resources and online learning platforms. Before the massive introduction of distance learning during the pandemic, students used:

- a combination of educational video lessons and scientific videos from educational YouTube channels (26.8%),
- online resources for preparing for testing the SFA (state final attestation) and EIT

(External independent test) with analysis of answers to questions (25.2%),

- pre-recorded and posted on the Internet interactive teaching aids for studying subjects in the programs of a medical college, including those compiled by teachers of this college (22.9%),
- lessons with a tutor (tutoring) using remote Internet platforms Zoom, Google Meet, Skype (18.1%).

Less often, online games were used as educational practices (4.9%), interactive training programs on the online platforms of the medical lyceum before the pandemic were used by only 4.5% of students, and 1.8% used Internet resources from other sources - educational institutions (Table 2).

Table 2.

Data on Internet resources used by students

Types of online resources used by medical students before the COVID-19 pandemic	Number of students and share in the sample n%
YouTube educational channels	50 (26.8%)
online tests in preparation for SFA and EIT	47 (25.2%)
interactive tutorials	26 (13.9%)
tutoring with the use of Internet platforms Zoom, Google Meet, Skype	34 (18.1%)
educational online games	9 (4.9%)
educational programs on the online platforms of the lyceum	8 (4.5%)
other online resources	3 (1.8%)

The studied time period covered the stage before the start of the pandemic and the stage of active implementation of distance learning. Sample (n = 187)

After WHO announced the pandemic and the need for anti-epidemic quarantine measures,

education was transferred to distance learning. And this is expected to increase the list of used online resources and online learning platforms. The ratio of online tools used by students of the medical lyceum during distance learning in self-isolation is shown in Table 3.

Table 3.

Data on electronic and Internet resources used by students in distance learning

Types of online resources used by medical students in the introduction of distance learning during a pandemic	Number of students and share in the sample n%
classes - video conferencing on Zoom, similar to traditional offline lessons in the classroom	187 (100%)
educational channels and science videos on YouTube	161 (86.0%)
educational programs on the online platforms of the lyceum	156 (83.5%)
pre-recorded and posted online lectures by lyceum teachers (non-interactive)	145 (77.6%)
online tests in preparation for SFA and EIT	107 (57.2%)
interactive tutorials	68 (36.4%)
tutoring with a tutor using the Internet platforms Zoom, Google Meet, Skype	34 (18.1%)
educational online games	13 (6.9%)
other online resources	3 (1.8%)

The time period under study covered the period of forced self-isolation during the COVID-19 pandemic. Sample (n = 187)

The visual distribution of the digital technologies and Internet resources used by the students of the

medical lyceum, which they used for educational purposes during the full-time training before the pandemic and during and after the transition to distance learning during quarantine due to the pandemic, is shown in Figure 1.

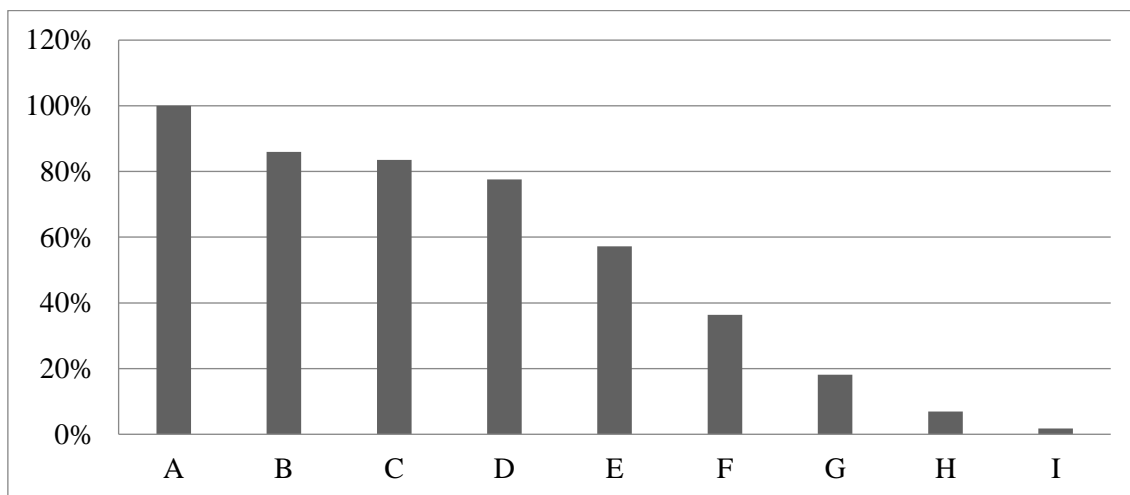


Figure 1. Histogram (bar chart comparing the volume and classification of educational online resources used by students of the medical school for educational tasks before and during the COVID-19 pandemic.

A-classes - video conferencing on Zoom, similar to traditional offline lessons in the classroom

B-educational channels and science videos on YouTube

C - educational programs on the online platforms of the lyceum

D -pre-recorded and posted online lectures by lyceum teachers (non-interactive)

E- online tests in preparation for SFA and EIT

F -interactive tutorials

G -tutoring with a tutor using the Internet platforms Zoom, Google Meet, Skype

H -educational online games

I -other online resources

Students were also asked about the number of (astronomical) hours spent online for learning purposes on various online learning platforms before and during the COVID-19 pandemic (n = 187).

Students then rated the effectiveness of online learning platforms on the Likert scale: 1 point showed the highest efficiency and high quality of learning, and 5 - the lowest. According to students' responses, video tutorials, such as instructional videos on YouTube educational channels, proved to be the most effective, followed by online preparation for SFA and EIT tests and interactive tutorials, as well as

interactive tutorials, tutoring classes using online Zoom, Google Meet, Skype platforms were evaluated as effectively improving the quality of learning. Lyceum students could use several online resources for education, interactive textbooks have shown high efficiency to improve the quality of education in medical lyceum programs.

During distance learning after the onset of isolation due to the COVID-19 pandemic, students spent an average of 7 to 10 hours learning online and using online platforms to learn and control online knowledge. This compares to 4-6 hours of similar learning activity during full-time offline training before a pandemic. The difference in time spent on distance technology and online training in the period before and after quarantine was significant (p <0.05). A comparable number of students spent less than 1 hour online using online learning platforms before and during quarantine restrictions. However, the number of students spending longer periods on online learning resources and online learning has increased, for example, 7.4% (n = 14) compared to 23.56% (n = 44) students who have spent more than 15 hours online-platforms for training before and during a pandemic (Figure 2).

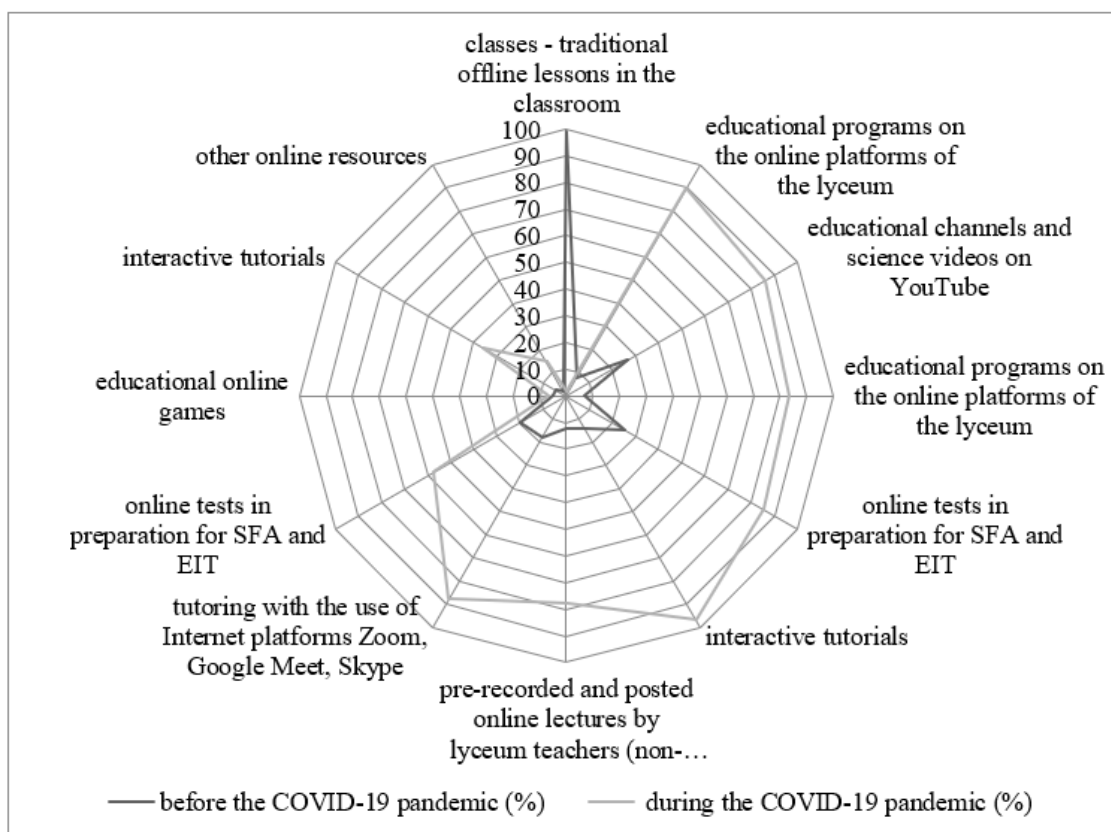


Figure 2. Histogram (bar chart) comparing the number of academic hours spent by students on online platforms before and during the COVID-19 pandemic and the distribution of types of online resources used by medical school students before and after the COVID-19 pandemic

To identify reliable significance, a calculation was performed using the method of nonparametric statistics of the Wilcoxon test, which found that the difference was significant ($p < 0.05$). The Mann-Whitney U-test showed that the time difference between students during the COVID-19 pandemic was also significant ($p < 0.001$).

Students' perception of online learning

In the study, 60.7% of students noted that such a feature of distance online learning as interactivity, positively affected the quality of information acquisition, students had the opportunity to interact with the teacher and other students through group online chat or talking directly using an audio headset (headphones and microphone). Some students also noted the usefulness of increasing online motivation and involvement in online learning methods such as group discussions, small discussion groups,

virtual labs and workshops, and interactive quizzes.

Medical high school students rated their experience on the quality and effectiveness of online learning on the Likert scale: 1 – “strongly disagree with the statement”, 5 – “strongly agree”, with intermediate values regarding the degree of “statement is acceptable” (Table 4). In general, students noted that the disadvantages of distance learning are the difficulty and limited ability to ask questions and receive timely answers from the teacher. Interestingly, on average, medical students showed a neutral attitude in answering the question of whether to increase the degree of interactivity of distance learning over the Internet. They also noted that its effectiveness in some criteria is lower than the face-to-face form (feedback, speed of reaction, the impact of technical aspects, the ability to focus on the learning process).

Table 4.
Students' perceptions of their online distance learning experience, rated on a Likert scale from 1 to 5

Statement	Mean	±SD
I like distance learning online more than full-time	2.6	1.4
I believe that distance learning is as effective a method as full-time in the classroom	1.9	1.4
I prefer distance learning full-time	1.7	1.5
Distance learning motivates well to study	2.8	1.2
It is easy for me to participate in a distance lesson online	2.6	1.3
It is convenient for me to ask questions in a remote lesson	2.7	1.5
I would prefer that distance learning be more interactive with the use of Internet technology	3.4	1.6
Teachers are prepared for distance learning as well as full-time	3.4	1.5
I feel that distance learning is a good preparation for the future profession of a doctor	2.3	1.2
Technical impact (quality of Internet connection) creates a problem with the quality of distance learning	2.7	1.9

1 = strongly disagree and 5 = strongly agree.
Likert values are derived as the mean ± standard deviation.

The main advantages of online learning are that it saves students time on travel (19.82%), provides flexibility of learning opportunities, adaptability (19.52%), the ability to learn at your

own pace, you can choose a comfortable daily routine (18.63%), it is more comfortable (15.84%) and reduces transport and other costs (14.24%) (Figure3A). Other students - future physicians (n = 82) also noted that distance learning saves time and gives them more opportunities for training, reduces anxiety from unnecessary social contacts.

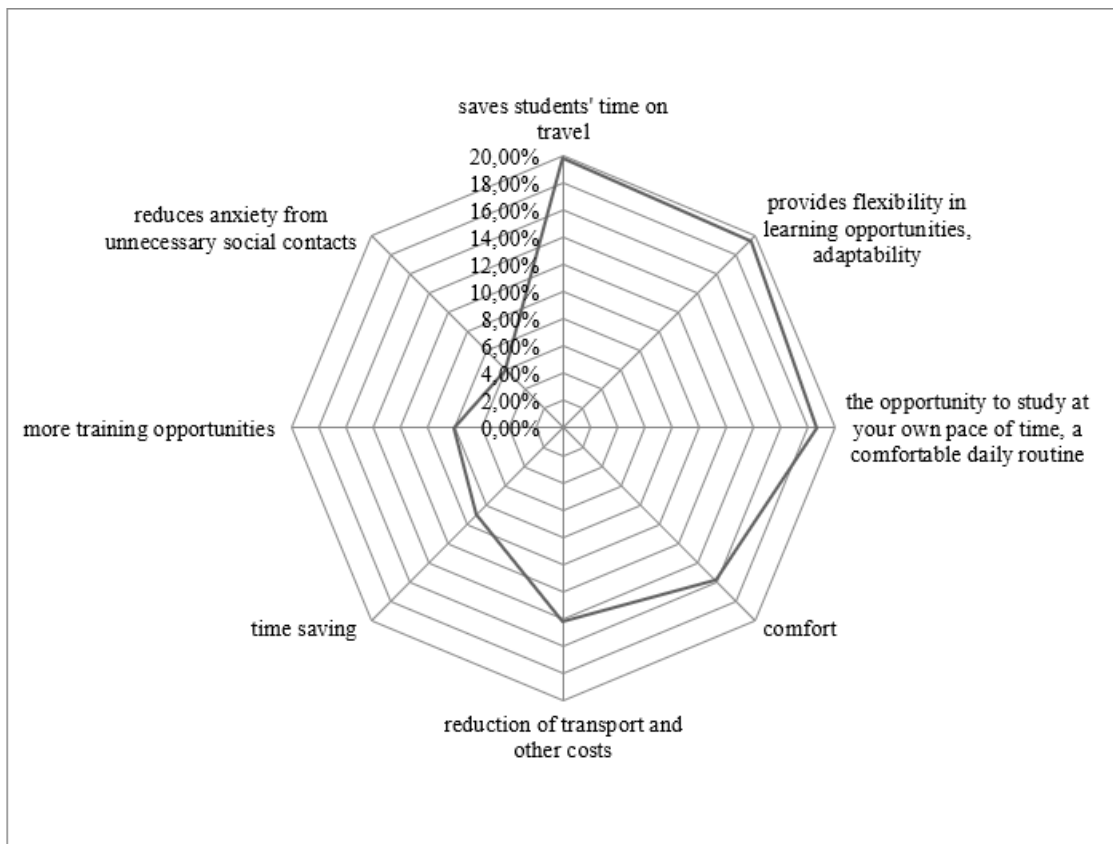
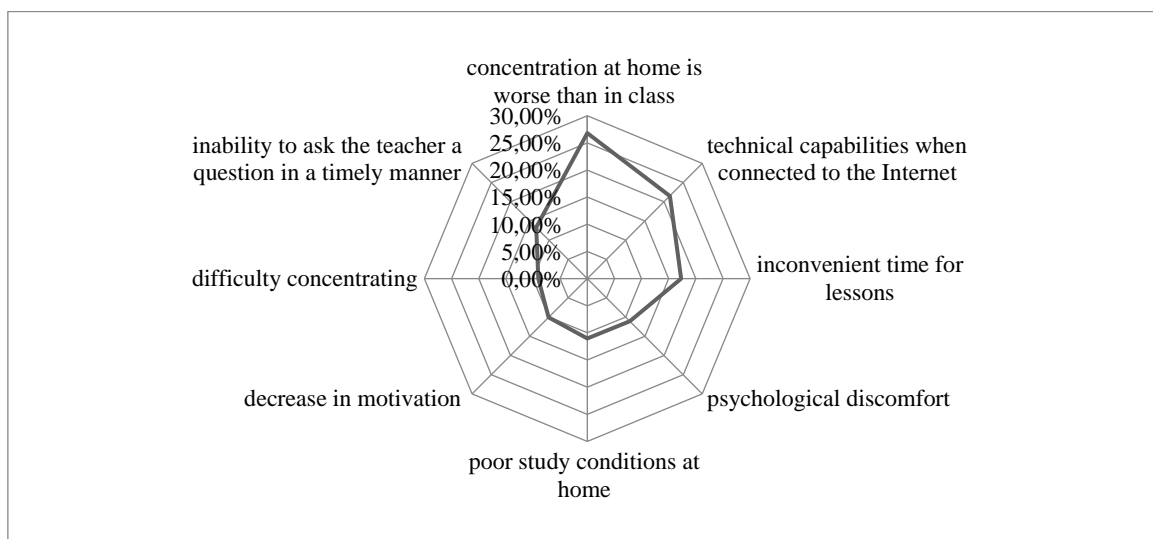


Figure 3. Histogram showing the advantages (A) and disadvantages (B) of distance learning using Internet resources (n = 187).

A. Benefits of distance learning using Internet resources of online learning



B. limitations of distance learning using Internet resources of online learning

Students of the medical lyceum were provided with a list of potential advantages of distance online learning, it was necessary to choose subjectively appropriate. it was also possible to enter their own statements (Figure 3 A). The questionnaire also provided students with a list of potential shortcomings of distance learning to assess what they considered to be relevant from the list, and was given the opportunity to enter their own statements (n = 187). As negative aspects and obstacles to effective distance learning with the use of digital technologies and Internet platforms, students named distractions - studying at home, where concentration is worse than in the classroom (26.8%), technical capabilities when connected to the Internet (21.5%), inconvenient time for lessons (17.3%), psychological discomfort (11.08%) and lack of space to study at home compared to high school classes (11.03%), (Figure 3 B). Students (n = 25) noted as additional disadvantages of distance learning: decreased motivation, difficulty concentrating and the ability to ask a question in a timely manner to the teacher, lack of contact (13.3 %).

Discussion

With the increasing severity of quarantine measures in the COVID-19 pandemic, it has become logical that many institutions of the continuing medical education system have turned to the distance learning process based on online platforms. However, online education has been used until the current quarantine restrictions. The spread of COVID-19 has strengthened the role of

distance learning using online resources today and the application of this methodology to the continuing health education system in the future.

Adaptation of the system of continuing medical education to new conditions due to the COVID-19 pandemic

Health education institutions have adapted to distance learning due to the pandemic in various ways: by providing interactive tutorials through online platforms, adding new digital resources to existing learning platforms, creating new innovative online learning opportunities with new platforms and digital solutions (Vallée et al., 2020). Some studies show that students' views have also been taken into account when implementing updated programs and online learning, but this is the nature of the practice for higher education institutions with higher levels of accreditation - medical universities (Wynter et al., 2019).

The impact of COVID-19 on the popularity and effectiveness (quality) of distance learning

The study showed a significant increase in the time spent on distance learning using Internet platforms before and during the pandemic (p <0.05). This was expected, because the main source and through pedagogical communication and interaction of students with their teachers was exclusively online resources, various Internet platforms, while previously, in addition to online communication in teaching, most of it was occupied by full-time. An important prospect is the initiated development of innovative educational projects for the development of distance medical education. The

results of the study demonstrate the desire of lyceum students who study remotely to make the interactivity of learning based on online technologies and Internet platforms more pronounced. This can be achieved through greater implementation of methodological developments such as interactive quizzes, online discussions, interactive surveys, etc. (He et al., 2021). The model of synchronous learning is formulated as a kind of special social educational space in which asking questions and getting answers to them takes place live in real time (Klibanov et al., 2018; Toquero & Talidong., 2020). Such maximum active communication between teachers and their students (where the difference between the dynamics of distance and full-time learning is minimized) allows to increase the involvement of students and create a more active dynamic and responsive educational environment.

Students' perception of online learning as a component of assessing its quality

Medical students rated their distance learning experience using online resources lower than regular and traditional full-time learning: an average of 1.7 points in the category of "preference for distance learning online", and 2.5 (ideally average grade) for the positive aspects conducting online lessons (Table 2), which shows that most medical high school students still prefer the quality of traditional full-time education. A previously cited study using the DREEM survey showed higher average scores for the traditional offline learning environment (Vallée et al., 2020). However, given that medical high school students at the time of the survey were limited to distance learning, their responses may not objectively reflect the effectiveness and quality of distance learning using online technologies and resources. Since distance learning has become the main direction of the educational process, including in the institutions of the system of continuing medical education, the analysis of its quality is of paramount importance in comparison with the previous traditionally used methods. And such an analysis is important for the further development of specialized medical education. In addition, unlike the specialized medical training at various levels previously assessed by the DREEM criteria, the current pandemic has caused a sudden and unexpectedly unpredictable shift towards the predominant use of distance learning using online resources and the Internet on a much larger scale. This has led to inconsistencies in the unprepared curricula of educational institutions, including lyceums, and insufficient training of

many teachers, and technical difficulties. distance learning and its assertion in the leading role as a single educational methodology. Despite the relatively high score (3.4 points) on teacher training and the effectiveness of the teaching process, the quality of distance learning courses in medical schools could be affected by several factors: technically inadequate quality of Internet connection and connection, distractions that affected on the quality of classes in the home and family environment (not conducive to concentration in school), not the most convenient time for training. This is shown by the results of the study.

Advantages and disadvantages of distance learning in the system of continuing medical education

For students, the main advantages of distance learning, when classes are held online and students are at home, are saving time on trips to study at the lyceum, the flexibility of educational techniques and methods, the ability to learn at their own pace (Figure 3A). However, these advantages cannot be applied as universal advantages of distance learning. For example, such a restriction as pre-recorded content (lecture, theory for preparation for testing, etc.) may be perceived negatively by students due to the inability to interact with the teacher. In addition, the study found that viewing pre-recorded lessons and lectures on online platforms, compared to being able to attend face-to-face classes offline, was negatively correlated with academic achievement. The main obstacles to distance learning, as shown by the results of the survey, are the inability to focus on learning in the classroom at home, technically unsatisfactory quality of Internet connection and communication during the lesson, inconvenient time of classes (Figure 3 B). This can put disadvantaged students at a disadvantage: uncomfortable family conditions, limited Internet access.

Evaluation of the quality of the educational process in the medical lyceum

Quality control of learning outcomes is the basis of the internal control system, allows to identify deviations between expected indicators and results through feedback, and determines the level of knowledge and skills acquired by applicants for education, formed competencies to the requirements of regulations for general secondary education. Quality control of teaching at the Ukrainian Medical Lyceum of the National Medical University named after

A. A. Bogomolets in full-time form of the educational process is carried out in the form of open classes, mutual and control visits, questionnaires, self-assessment. Quality control of learning outcomes is carried out at all levels: founders, administration, departments, teachers, parents, public organizations. From November 28, 2021 in the Ukrainian Medical Lyceum of the National Medical University named after A. A. Bogomolets underwent an external certification audit of the quality management system of the institution in the field of education. Confirmation of the quality of the educational process in the Ukrainian Medical Lyceum of the National Medical University named after A. A. Bogomolets at the international level has received a certificate of compliance with the requirements of ISO 9001: 2015 This confirms compliance with the requirements of international standards and provides a priority position in the market of educational services. The certification body of management systems highly appreciated the quality management system and confirmed its compliance with the requirements of ISO 9001: 2015 (certificate № UA. IF. QMS. 47-19) and DSTU ISO 9001: 2015 (certificate № UA. IF. QMS. 46-19).

In light of the active implementation of the distance education system in the new conditions, it is extremely important that it meets all the quality management criteria of the international standard ISO 9001: 2015. Since, according to the results of an external audit, the medical lyceum of the National Medical University named after A.A. Bogomolets received certificates of compliance of his quality management system with all the requirements of the ISO 9001: 2015 standard until January 2022, then an important task of the current time is to maintain this high level in the conditions of distance learning. The study showed that the main significant indicators make it possible to assert that the quality of the educational process in the new conditions.

The future and future directions of distance learning in the system of continuing medical education

The active introduction of innovative online technologies, distance learning and the digital environment into the continuing medical education system can play a significant positive role for the future. Providing students-users of Internet platforms and online resources with the opportunity to adapt the pace of learning to individual parameters, the acquisition of new skills due to the variable nature of emerging and multiplying digital resources can actively

influence the education of students - future physicians. Having discussed the benefits of traditional full-time and actively implemented new distance learning, as well as the future of medical education at all levels with increasing involvement of Internet resources, we hypothesize that in the future to maximize the quality of medical education it is advisable to use complex benefits online and full-time offline learning. Such a model, which is based on a combination of the advantages of both systems and, if possible, ignores their disadvantages, improves learning outcomes and quality, motivation, cognitive abilities and students' learning. Students receive online materials for thoughtful individual development (offline), then discuss them in interactive group sessions at videoconferences, group chats, individual chats with the teacher (this provides timely feedback), etc. This gives the opportunity to learn in the individual most comfortable mode and at the same time take responsibility for their own decisions.

Conclusions and Implications

Distance learning in these unprecedented times of quarantine restrictions due to the COVID-19 pandemic has proved to be an interesting and powerful factor influencing changes in the learning process, which became visible due to the introduction of distance technologies and digital solutions, the perception of the updated learning process. process in the medical lyceum, and the ability to control the quality of education in the distance form on the example of training in the medical lyceum. By testing and reflecting on changes in education due to the pandemic, we understand the need to move forward and maximize the benefits of both face-to-face offline and distance learning online, ultimately improve quality and efficiency, and tools for evaluating the educational process in future medical schools. The study may offer institutions of the preparatory stage of medical education, such as lyceums, to resort to such formats of distance learning using online platforms as: video lectures and discussions, for example, in Zoom, interactive group forms in small groups, virtual laboratory and practical work, interactive consultations and classes. The use of modern online platforms on the Internet for learning, allows students of medical lyceum, firstly, to absorb information at a convenient time, and secondly, to constructively discuss educational material with teachers and classmates. After overcoming the limitations of the pandemic, we expect further active integration of online distance learning methods with the use of virtual

digital and Internet resources into the traditional system of continuing medical education.

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