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**CHANGES IN MEDICAL EDUCATION AS A RESULT
OF THE COVID-19 PANDEMIC**

***Abstract.** This article examines changes in the process of medical education and health care systems around the world caused the COVID-19 pandemic. The analysis of scientific and scientific-methodical literature shows: emergence and spread of the COVID-19 pandemic have contributed to the development and improvement of distance education. It is already indisputable that a return to the regular curriculum is unlikely and that most of the creative changes that have already taken place during quarantine restrictions will be improved and used in the future.*

***Keywords:** the COVID-19 pandemic; quarantine restrictions; medical education; distance education.*

Introduction. It is a well-known fact that great pandemics have a powerful impact on society, in particular on education. Research on the history of this issue [1] has shown that there are many documented examples of the formation of certain aspects of education under the influence of certain infectious diseases. For example, leprosy in the early Middle Ages significantly changed religious education, the

Black Plague contributed to the emergence of medical schools, infirmaries, and hospitals. It was during the epidemic of this disease that quarantine restrictions began to be imposed, and sanitary education spread rapidly. The spread of smallpox led to the need to gain knowledge about its spread and the first mass immunization. COVID-19 has ruined everyday life around the world and has become a disease that requires immediate global appropriate action to protect human health. At present, modern scientific and medical advances make it possible to detect and treat complex diseases, and now the greatest danger associated with COVID-19 are reactions that are disproportionate to the risks to human life, but they lead to problems in key areas of social activity, in particular, such as provision of educational services, meeting basic needs in the field of health care and some others [1,2].

Given the urgency of the problem of training future doctors in a global emergency situation [3], which arose due to the spread of the coronavirus disease, there is a need to change the way of training health professionals on a constant basis. COVID-19 has caused unprecedented changes in the process of medical education and health care systems around the world [5]. The authors [4] believe that during the COVID-19 pandemic, four main problems arose in medical education, namely “Health and well-being of teachers and students”, “Spatial constraints”, “Temporal constraints”, and “Access to resources”. The highly contact-contagious nature of the virus made it difficult to conduct classes in the usual way, led to the introduction of restrictions on group meetings and educational activities, which generally affected the educational process, which must be holistic and continuous. Based on the emerging risks, it is obvious that students had to stay at home and follow the rules of social distancing. This also applies to training at clinical departments, where practical classes take place in the relevant departments of clinics and hospitals. As a result, there are serious concerns about the safety of patients who communicate with students who may be asymptomatic carriers of the virus [3]. On the other hand, patients can be a source of danger for future doctors. Based on the above, higher medical educational institutions have a task to transfer educational programs to online platforms as soon as possible, which would provide the opportunity for continuous and high-quality training in a pandemic [6, 7].

Many studies have been devoted to the organization of quality online studies, its positive aspects, as well as overcoming some negative manifestations [8-10]. Given the best practices of educators, it can be argued that the most successful quality education is a combination of traditional and distance learning, i.e. the creation of so-called "blended learning" [8-10]. But the challenges that arose during the epidemic of coronavirus infection COVID-19 are extremely relevant to distance learning and its improvement in higher medical education [3]. It is already indisputable that a return to the regular curriculum is unlikely and that most of the creative changes that have already taken place during quarantine restrictions will be improved and used in the future.

Discussion. In March 2020, the COVID-19 pandemic forced medical schools around the world to abandon traditional, face-to-face teaching approaches and very quickly move to distance learning for medical students. The "distance learning" model is defined by four main components: "(a) it is institutionally based, (b) there is a separation of teacher and student (usually geographically), (c) there is the use of interactive telecommunications, and (d) there is sharing of resources (data, voice, and video)" [11]. To facilitate distance learning, online learning is used, which involves the use of various digital platforms to communicate and attract people who are within a certain geographical distance. At ZSMU, the teaching staff of the departments, and students have successfully mastered and used the online platform MS Teams. All forms of classes during quarantine restrictions, namely, lectures, practical classes were held in the format of "videoconference". The advantages of this form of learning are synchronicity of connection, the possibility of visual contact, as well as communication between students and teachers. This is real feedback, which is regular and meaningful because in online learning, teacher-student interaction must come first. At full visualization of the educational process communication between students and the teacher is always maintained. Providing the necessary explanations, answering questions, regulating the discussion of topics between students in the group, structuring the learning process, organizing independent work - is not a complete list of functions performed by the teacher in the classroom. Communication between teacher and students has a certain

psychological aspect, in particular, the authors [12] believe that regular eye contact, and the ability to communicate mitigates the effects of social distancing. This issue is especially relevant for first and second-year students. According to a study [4], it is junior students who have more health problems, symptoms of depression, and anxiety compared to students of the clinical courses in distance learning.

A well-known fact of successful study is the high motivation of students to acquire knowledge, skills, and abilities that will be needed in the chosen profession. Undoubtedly, the role of the teacher in creating positive motivation is difficult to overestimate. The issue of motivation in distance learning is especially relevant. Students must be self-organized in terms of mental work and rest. Isolation requires a clear demarcation between work, study, and home, which, incidentally, is true for teachers and support staff [3].

The role of teachers in promoting positive motivation lies in a well-thought-out and high-quality organization of learning [12]. It is necessary for students to know exactly where they will apply the knowledge and skills they acquire in this discipline throughout the educational process, to see vertical and horizontal interdisciplinary links that help to consciously study a particular topic in mastering a discipline as well as understand the practical meaning of the material being studied (*clearly defined learning objectives and their significance*). Content must be carefully selected and up-to-date (*interesting and relevant training course*). The teacher and students must understand what is the basic training (*assessment of students at the entrance*), as well as what are the expectations of participants in the learning process from learning the discipline (*this can be done in the first practical lesson through oral interviews*). A prerequisite for creating positive motivation is the control of knowledge, skills, and abilities acquired as a result of learning. Insufficient visual interaction during control activities can be called one of the significant shortcomings of distance education. "It should be noted that the use of technical means does not give a full guarantee of academic integrity. It is better to accept the fact that we take the so-called "open book tests", i.e. that students will use available sources, and we must take this into account when compiling the questions that we bring to control [14]. Analyzed and took into account the recommendations of leading experts,

teachers of departments developed materials on the control of students' knowledge, namely: formulating the content of tasks so that the ready answer couldn't be easily found in available sources; giving tasks that require analysis, comparison, evaluation of a phenomenon; for test questions to limit the time to complete tasks (*randomize questions and the order of answer options*). One of the strongest stimuli for learning is the personal progress of each student, so the teacher should try to emphasize the individual development of each group member during the feedback.

To increase motivation and speed up adaptation to distance learning, it is necessary to clearly organize the work process and explain to students how to quickly obtain the necessary and relevant information on the university website, on the pages of departments where a particular discipline is studied. Students have access to all course materials, namely: presentations of lectures, textbooks, databases of test questions, answers to typical questions, and instructions for exercises and tasks. In addition, the syllabi for the disciplines, which are posted on the electronic resources of the university, clearly define the structure of the course for students, a list of topics and tasks, assessment criteria, and more.

One of the most important aspects of learning is the education of students, which does not stop at the transition to distance learning. With the advent of the highly contactogenic virus, it is necessary to change the thinking of people who have chosen the difficult profession of "doctor". The old way of thinking that doctors will work when they are sick was considered altruistic and professional, with the patient's priority over the doctor. However, the situation that arose with the spread of COVID-19 has made some adjustments. Clinicians who come to work when they are ill, as well as those who may be asymptomatic and silently incubate the virus, can facilitate the transmission of the virus to others. Therefore, the culture of professionalism and altruism should be reviewed and take into account the consequences of potential actions, even with good intentions [3].

Thus, distance learning is the interaction of teachers and students at a distance that highlights all the inherent components of the educational process (purpose, content, methods, organizational forms, teaching aids), and performs all its basic functions (educational, educational and developmental) specific by means of

Internet technologies.

Conclusions.

1. The emergence and spread of the COVID-19 pandemic have contributed to the development and improvement of distance education.

2. The analysis of scientific and scientific-methodical literature [15] shows that most innovations related to distance education are characterized as exceptionally positive, high quality, and completely satisfactory.

3. Return to a typical learning platform is unlikely to happen [16]. It is becoming mandatory to use in the transition to offline learning the developments that have contributed to visual learning in distance education, namely the virtual patient, various simulators, etc.

4. Desirable changes in the medical training program are those that provide greater emphasis on infection control, pandemic modeling, the development of telemedicine, and so on. New students need to be provided with modern tools to respond to unforeseen medical events in the future.

5. The education of a culture of professionalism and altruism must be reconsidered. The physician must consider all potential risks that may arise during the work of the patient-clinician [3].

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