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MEDICAL EDUCATION DIGITALIZATION WITHIN THE GLOBAL PARADIGM "DIGITAL HEALTH"

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Abstract

The paper addresses the issue of digitalization in medical education as one of the modern challenges of the Global Education. Modern medical education is characterized by dynamism, based on the requirements and demands of the modern healthcare sector. Therefore, one of the tasks in this field is to increase the professional level of university graduates, future doctors. The important strategy of medical institutions is to train qualified, competitive specialists, not only possessing general cultural and basic professional knowledge, but also being aware of the information culture at a personal level that implies well developed information and communication literacy, i.e. knowledge about information and digital technologies, the ability to apply this knowledge in personal and professional purposes. The paper describes the digital educational environment of Ural State Medical University (Yekaterinburg). The research purpose is to identify the attitude of future specialists, who intend to work in the healthcare sector, to digitalization of medical education. Knowing their attitude will help to further better planning the development of educational programs targeted at digitalization. The study involved 220 students of Ural State Medical University. The research results will allow modernizing the educational process through the optimal implementation of digital technologies, with the focus on a possibility to have positive and negative consequences brought or caused by innovations. The analysis allowed us to conclude that in modern society, digital technologies are the basis of modern education, ensuring the continuity of education, i.e. lifelong learning and personalized approach to learning.

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Keywords: Medical university, medical education, digital health, digital educational technology, students.

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1. Introduction

Digitalization as a globalization process that is actively occurring in modern medical education is subject to studying and analysing, with all positive and negative features of its implementation in the educational processes. In this regard, it is required to evaluate some possible consequences that might appear after the integration some digital technologies, as well as to verify and prove the appropriateness of their use. Transformations happening in the society, education, and medicine lead to a change in the requirements to the content and quality of education in general, the medical one in particular, which leads to the development of new technologies, programs, and to new expectations from learning outcomes.

The present-day legislation of the Russian Federation in the field of healthcare regulates not only the requirements for the quality of educating doctors (“On the basis of protecting the health of citizens in the Russian Federation” (No. 323-FL of 11/21/2011) and “On education in the Russian Federation” (No. 273-FL dated on December 29, 2012), but also “features of medical care provided with telemedicine technologies.” According to the Federal Law “On the Basics of Protecting Citizens' Health in the Russian Federation” (No. 323-FL dated on November 21, 2011, and amending Law No. 242-FL dated on July 29, 2017), doctors can provide medical assistance with the use of telemedicine technologies. In the framework of this Law per under Art. 36.1 “a doctor is allowed to carry out the correction of the previously prescribed treatment provided that he diagnosed and prescribed treatment at the face-to-face appointment (examination, consultation)” by using telemedicine technologies.

It should be emphasized that one of the strategic documents of the scientific development of Russia is the program “Digital Economy of the Russian Federation”, approved by Order of the Government of the Russian Federation on July 28, 2017 No. 1632 p. The strategy proposed in the program includes conditions for the development of not only the economy, but rather creation of a new knowledge society in the Russian Federation, which will improve the welfare and quality of life of people living in our country through increasing digital literacy, including the knowledge on how to use modern digital technologies. The implementation of the goals and objectives of the proposed program puts forward certain requirements for the education system (Okushova & Sartakova, 2009). The integrated inclusion of digitalization in the education of highly qualified specialists is an integral factor in the development of modern society, striving for competitiveness in all spheres of human development.

2. Problem Statement

The relevance of the research is fraught with the modern requirements for quality in medical education. By following the 2020 Concept of e-Education, both students and teachers are required to increase their digital competence and systematically receive trainings in digital technologies (Janelli, 2018). In our opinion, digital competence is one of the most important skills for professional medical activity. It is important to note that modern youth – children born in the 90s of the XX century – belongs to generation Z. In a certain sense, this generation displays a contradictory regarding information culture which is not related to culture in the traditional sense. On the one hand, it is a digital generation that can work with IT aimed at getting a quick result that entails quick knowledge acquisition and its transformation with the help of digital devices and the Internet. This leads to the development of "clip"

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thinking. In this regard, there is the need for the modernization of the educational process and mobility on the part of university students and teachers through not formal informatization and digitalization of the educational process, but through the creation of some conditions for the comprehensive development of university students and medical practitioners regarding improvement of the digital culture, considered as a necessary component to personality development. The cultural component implies how stakeholders, working in the health sector, accept or reject new technologies that depends, in its turn, more on results than on how technologies evolve (Mesko & Győrffy, 2019).

In connection with the rapid development of medical technologies, on the one hand, and the task of ensuring the quality and accessibility of medical care, on the other hand, it seems relevant to solve the issue of transforming education in accordance with the international standards, without losing its advantages, identity but with the quality rise in terms of the teaching and learning process. Modern telehealth technologies allow patients even in the most remote parts of the world to have access to high-quality medical care and diagnostics (Newman, 2019). “Digitalization in a medical university provides an opportunity not only for future practitioners of healthcare sector to improve their knowledge in the professional sphere but also to support their self-development as practicing doctors. Digitalization in education is considered as the interaction of students with the electronic educational environment, which is becoming a popular format of education in the modern educational world. At the same time, one cannot but pay attention to the fact that there is the absence of a regulatory framework for digital education in higher medical institutions. Thus, the main contradictions that prove the relevance of the study are:

- the need to use digital technologies in higher medical education and the lack of a regulatory framework and methodological tools and materials;
- the need for teachers to use the capabilities of digital technologies in the educational courses and their insufficient practical readiness to undertake this activity.

3. Research Questions

Digital technologies allow concentrating on the educational process not just on meeting the requirements of the professional and educational standard, but on shaping the professional culture of a future specialist, his/her desire for life-long independent self-improvement with the help of information tools and technologies (Guzhova, 2014). It should be noted that information and communication technologies are not a means that can completely solve education challenges. Unfortunately, they do not shape a holistic picture of the world among students. Another drawback of the “digitization of medical education is the threat that even the practical side of medicine studies will move beyond hospitals” (Al-jibury et al., 2015, p. 581). Automated systems are capable of transferring mass knowledge and skills, but cannot replace "live" learning. Blended learning, hybrid e-learning based on interaction with teachers, can combine soon the benefits of traditional teacher-student interaction with the opportunities offered by online courses. It helps to increase the motivation of students through providing diversity in courses and their content, through enhancing joint search activities with effective monitoring it.

The medical university is not only a place keeping the academic traditions but also an institution, which has a high potential for innovative initiatives. Only through accepting this truth we can explore the potential of reforms happening in the educational system. To implement it we have to clearly understand

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what modifications we need just not to let the educational system be under threat (Dmitriev & Solovova, 2018). Digital, e-Education is possible in various forms: blogs, online encyclopaedias, online discussion clubs, online games and simulations, online courses in the framework of Learning Management Systems (LMS), mass open online courses (MOOC), tablet applications, testing programs, e-books (Lysak, 2017). The high level of application that can be undertaken towards digital technologies and other means of e-learning, we need to train university teachers to work in a different technological format, using digital learning tools, due to which electronic communication has arisen (McAndrew, 2018).

It follows that the awareness of these transformations is happening due to new media technologies and this fact provokes interest and concern among scientists (Lapão, 2019). Social changes lead to some amendments in HE requirements and learning outcomes (Privalova, 2017). Social networks act as an effective channel of the image communication between a modern university and its users/consumers. It is especially relevant in our time of "virtual competition" among universities (Sharonin, 2019). Either, the social changes allow to "educate the next generation of clinicians and medical scientists to solve issues linked with big data that could have a direct impact on patient care in the coming decades" (Kolachalama & Garg, 2018, para. 10).

4. Purpose of the Study

Changes in medical education lead to university adaptation to new requirements, while keeping their uniqueness and competitiveness in the educational market. Innovations in medical education have almost become synonymous with technology, and their use in this area is growing exponentially (Delgaty et al., 2017). The paper attempts to analyze the positive and negative aspects of digitalization in the medical university. Digital technologies allow introducing new tools for university development. Since today the world society has become globalized, university students or medical practitioners may gain access to medical information that was inaccessible before.The purpose of our study is to identify the attitude of future practitioners of practical healthcare to the transformation and digitalization of medical education.

5. Research Methods

The research, described here, includes the methods as literature review and analysis, interview, survey, content-analysis, math statistics. A questionnaire is an empirical research method based on a survey of respondents. The choice of this method is explained, first of all, by the efficiency of obtaining information due to its massive covering, by the freedom to choose options in answering, the ability of respondents to express their opinions, ensuring complete anonymity, and the lack of impact on respondents. As part of the research, the questionnaire was developed, which includes closed questions of multiple-choice format, closed questions of a dichotomous format, and open questions. The study involved 220 students of Ural State Medical University, who study at the therapeutical and paediatric faculties, the average age is 19.8 years, among them male students are 18.5 %, female – 81.5 %.

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6. Findings

The study targeted at revealing the associations to the concept “digital technologies in a medical university” that was conducted with the content analysis method showed that the most common concepts are – online courses, video lectures and presentations, including video lessons, electronic library, educational platforms, electronic-interactive atlases, 3D models, online testing. Most students (90 %) attribute electronic textbooks to digital technologies in education; a significant part of students (76.1 %) understands digital technologies as online courses; 60.1 % of students associate online discussion clubs in academic disciplines, half of the participants have in mind tablets as the associations to digital technologies, and one third of students includes into this notion some educational blogs and simulators. Answering the question “Can digital education replace “live” communication?”, 75.1 % of students said that digital learning cannot replace “live” communication, emphasizing that personal contact with a teacher is important; in their opinion, through “live” communication one can acquire practical knowledge, discuss already learnt or new learning material, ask questions for better understanding the information, see real emotions, which a computer cannot perform. Some respondents said that each of them perceives educational information in a different way, which may also affect their learning success and progress.

As teachers indicated, while communicating with classmates, students are developing their social skills but digital educational technologies can lead to personality degradation, young people will forget how to talk, write, which negatively affects the development of communicative competence, both in personal life and professional career. One-fifth of the students found it difficult to answer this question. Only a small part of students (9.6 %) noted that digital learning can replace “live” communication. Despite the fact that modern youth is digitalized, many people still more easily perceive information when working with the traditional materials, such as paper-based textbooks, atlases, etc., noting that a book can be held in hands, one can look through it, emphasize important thoughts, statements, and ideas; only one third of students preferred the e-books to paper ones.

At the same time, most students spend about 6 hours per day with their gadgets (computer, tablet, phone), of which approximately 1.5 to 3 hours per day is part of university studies. Today, many departments have moved to computerized testing (during classroom studies or remote online testing). An electronic library for students (textbooks, study guides, 3D atlases, lecture presentations, etc.) has been developed and it has been displayed for each discipline on the educational portal. However, despite the diversity of digital technologies at the university, 45.7 % of students say that “e-learning” does not provide high-quality education. Respondents motivated their answers by the fact that: their eyes are tired, not all topics of learning material can be fully and qualitatively expressed and transmitted via IT, working at a computer entails the temptation to be distracted by other Internet sites, and the material is not always clear to digest.

E-education does not control the assimilation of knowledge and the level of competencies depends on the motivational sphere of the individual, the student's desire. Only 15.3 % of students noted the positive side of electronic education, indicating as positive factors the existence of many blogs and YouTube channels run by university professors, the ability for students to gain knowledge at any time they would like (at home, in transport, etc.). An interesting fact is that a significant part of students prefers traditional lectures (70.3 %), although distance lectures and webinars are also positively evaluated

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by a fairly large number of students, 46.2 and 58.9 %, respectively. At the same time, many students indicate that e-learning contributes to the development of digital literacy, independence, the ability to quickly find the necessary information, analyze it, sort it out, and filter it. E-learning develops concentration and stability of attention, allows to focus on educational operations and activities. These results allow to conclude that the digital transformation of education implies not only IT tools integration into educational processes, but it is also a significant cultural and organizational change in medical education as itself.

7. Conclusion

Digital technology is the basis of modern education. The digitalization of a medical university is the priority, both for education and practical healthcare. Digital technologies in medical education provide students with life-long education and a personalized approach to learning. The competent and effective use of digital technology followed by an analysis of all practical issues in the classroom (i.e. hybrid learning) will allow students to become highly qualified specialists in practical healthcare. The challenges facing the universities are updating the choice of the strategies and global trends for further digital development, which will strengthen and improve the quality of teaching for future doctors who can be included into the global digital health trend, which gives "the opportunity to do the work at the higher, more creative, level" (Mesko & Győrffy, 2019б p. 3). Also, the digitalization of medical education aggravates the need for the development of a regulatory framework and software for digital transformation.

Thus, the transformation and globalization in medical education digitalization is a trend direction, improving the quality of teaching and educational resources, consolidating united information space, providing access to educational resources from any mobile device, contributing to the expansion of the global practice of digital health in Russia. "Adequate digitalization of healthcare will allow changing the paradigm of medical care, as well as the mechanism of patient participation and involvement. Sustainability of healthcare will depend on how efficiently we design the digital services" (Lapão, 2019, p. 8).

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