

**LINA RYBALKO**

Professor of the Department of Physical Culture and Sports, National University Yuri Kondratyuk Poltava Polytechnic; *e-mail: lina-rybalko@ukr.net*

**VILTORIIA HOROSHKO**

Docent of the Department of Physical Culture and Sports, National University Yuri Kondratyuk Poltava Polytechnic; *e-mail: talgardat@gmail.com*

**LARYSA ONISHCHUK**

Docent of the Department of Physical Culture and Sports, National University Yuri Kondratyuk Poltava Polytechnic; *e-mail: larpolt\_turizm@ukr.net*

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## HEALTH CARE EDUCATION: REALITIES AND PROSPECTS

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### ABSTRACT

The ongoing transformation of many aspects of health care requires an in-depth assessment of the most important principles of medical practice. These transformations should be seen as an opportunity for all medical professions to respond to reforms in a new combination with society. Healthcare is increasingly democratized: information, testing, and therapy will be combined in the accelerated technological convergence. The role of the health care provider, who is no longer the sole owner of the body of knowledge, is changing dramatically, and it is crucial that health care professionals adapt through practice, education and training to reflect new skills that complement and enhance all aspects of care. The need for change is necessary for the understanding what health technologies should be managed. The answer lies in the intangible nature of the human spirit and the will to achieve health and well-being for all.

### KEYWORDS

digital platforms, health care system, digitalization of medical processes, education of medical specialists.

The development of the digital economy and the approach of platforming in different countries also have their own characteristics. In Japan, the process of forming a digital platform is implemented as part of a strategy to build an intellectual society „Society 5.0“. Experts are considering the possibility of using Lumada’s own open platform as a result of the implementation of Hitachi’s Society 5.0 program, the world’s largest Japanese conglomerate. These include energy, logistics, disaster solutions, as well as maintenance solutions, a set of mobility solutions and diagnostic services (diagnostic service), payment service, intelligent production (smart planning). In the United States, there are currently many platform companies operating in various sectors of the economy, such as Uber, Lyft (ordering taxis and private drivers) and Airbnb (Internet rental platform), Monster, LinkedIn, CareerBuilder, Upwork, TaskRabbit, Freelancer, HomeAway (job and staff search platform), Youtube, Vimeo (video hosting), Amazon (market), Facebook (social network), Google Platform (Google+, Google Drive, Play Market) and so on. American companies are world leaders in digital technology, software development and technology solutions, Apple (iPhone, iPad, MacBook, Apple

Watch, etc.), General Electric (GE Energy, GE Healthcare, GE Aviation Home & Business Solutions, etc.), Microsoft Corporation and others. The development of the US digital economy is carried out in the direction of „Industrial Internet Consortium”, within the program „Digital Economy Agenda”. In this program, the government prioritizes the development of a free and open global Internet, online security, accessibility and professional skills, as well as innovation and new technologies. In China, the formation of digital platforms is one of the priority areas of the strategy „Internet +”, according to the program, conditions will be created for the mass emergence and operation of digital industry platforms. Currently, there are Chinese platform companies such as Alibaba (marketplace) and its subsidiary services (aliExpress, aliPay, taobao, etc.), Baidu (search engine), Pingan (insurance group of companies), Internet services and platforms from Tencent (JD.com, QQ, etc.). The digital development of the EU economy is carried out in the direction of „Industry 4.0” - among the programs approved by the government - „Europe 2020” and „Horizon 2020”. Within the framework of these concepts, the creation of the EU Digital Single Market is noted.

Nowadays, the EU has approved and implements pilot projects such as:

- digital production platforms for connection to intelligent factories (DT-ICT-07-2018-2019, Digital Manufacturing Platforms for Connected Smart Factories);
- agricultural digital integration platforms (DTICT-08-2019, Agricultural digital integration platforms);
- digital services platforms for the agricultural economy (DTICT-09-2020, Digital service platforms for rural economies);
- interoperable and intelligent houses and networks (DT-ICT-10-2018-19, Interoperable and smart homes and grids);
- big data solutions for energy (DT-ICT-11-2019, Big data solutions for energy);
- smart hospital of the future (DT-ICT-12-2020, The smart hospital of the future), etc.

The national digital platform E-Health is almost three years old, it is used by almost 30 million Ukrainians. The main tasks facing E-Health across the country in 2017-2020 can be divided into three blocks.

1. To build a basic infrastructure in the form of a national register: medical institutions, health workers and patient registers.
2. To transform the health care system and supporting the National Health Service (NHSU) process: contracts between the NHSU and health care organizations, managing the NHSU platform, managing the configuration of health care programs, maintaining drug directories and health services health, processing of registration data (registration of death, inspection of a medical institution, verification of a submission, etc.), submission of conclusions and verification of a doctor’s choice, automation of capital statement preparation (invoicing and payment), analysis, etc.
3. To digitize existing medical processes. For example, issuing electronic prescriptions instead of paper ones or entering them into the electronic system of the patient’s medical card (electronic medical documentation).

However, the author considers these stages only preparatory in medicine considering the further development. In the future, an important point in health care will be how the analytical interpretation of clinical information through artificial intelligence (AI) will influence decision-making by human professionals (and people in general), as AI will be the only realistic means by which people will be able to meet the requirements of their work in the future. The practice of medicine will be increasingly supplemented by machines, which is a symbiotic circumstance. It is well known that healthcare professionals undergo significant revision and automation, focusing first on routine

tasks and then gradually moving to intermediate and advanced skills. Some of the responsibilities of doctors who will not replace machines will be transferred to alternative health care (rehabilitation or habilitation) staff, including new classes of doctors who have not yet been identified. It is currently unclear how these predominantly non-profit organizations will respond, adjust or actively initiate their efforts, as it is often difficult to change the old practice conceptually and practically.

It should be clear that the acceleration of change in medicine and health care is directly affecting the medical institutions. To adapt and truly prosper these institutions must develop a strong culture of innovation and experimentation, which is a difficult task, given their strong culture of academic individualism, established programs and policies. Creating an „optimal environment” for experimentation in partnership with the technology sector is a high but necessary requirement of today, as creating a future environment will require reducing barriers to innovation. A strong emphasis on the optimal integration of healthcare with technologies to reduce healthcare costs and improve quality will help achieve the threefold goal in the future era of value-based healthcare. This enables academic institutions to create, in coordination with education and research missions, a health education system that incorporates significant synergies, such as real-time clinical trials, that directly inform patients and healthcare professionals about their education. To support this integration, universities and academic health centers need to rethink the role of computer science as the organizational support department that underpins the organization’s programs and processes. In anatomical terms, this can be described as the idea of computer science as a central and peripheral nervous system of the institution.

The importance of adaptation of foreign students into the culture and the system of education of a host country at times of rapid globalization and internationalization has been studied by several scholars in the 21st century [1], [2], [3], [4], [5]. Adaptation has an undeniable impact on the academic performance of students and their future professional medical practice. In the last decade, the processes of globalization and internationalization have influenced students’ migration within the countries and made it easier to travel around the world for the education processes freely. This tendency gave the ride for the modern studies of the ways and methods universities should apply to provide unique environments for foreign individuals and prepare them to be motivated to grasp skills and to be able to acquire knowledge. However, it is a complicated issue since usually, foreign students cannot escape the cultural shock and linguistic gap in a host country. They face challenges such as different learning styles, unfamiliar living conditions, differences related to a language, as well as cultural and personal barriers, which may have a significant impact on their psychological state, academic performance and professional practice [1].

As the number of foreign students traveling abroad for educational purposes increases as the result of rapid globalization and internationalization, universities require institutional and academic reactions to be evolved providing more resources of support to address the problems of adaptation of foreign students. Adaptation is one of the main elements of educational and social inclusion; that, in case of its failure, may lead to several consequences, including interpersonal conflicts, anxiety, discouragement, poor learning result, poor satisfaction with studies and future profession, and sense of social isolation [2].

There are three main methods of adaptation foreign students usually deal with, namely: geographic adaptation, psychological adaptation, and socio-cultural adaptation. Geographic adaptation means students' adaptation to the characteristics of a host country's locality and their familiarity with the place of residence and the educational institution. Psychological adaptation is foreign students' psychological reactions to changing surrounding conditions they face when migrating for educational purpose. To become social-culturally adapted foreign students need to be familiarized with the culture and traditions of a host country and be able to fit with them to interact with members of society. Socio-cultural adaptation is usually associated with culture learning and acquisition of social skills in the host culture, that may be influenced by various variables such as language ability, adaptation strategies, length of residence in a host culture, cultural distance, age, interactions between foreign students and host nationals, etc. Positive emotions in relationships with others, high self-esteem, pleasant educational environment, motivation, and sense of spiritual comfort are the keys to successful geographic, psychological, and socio-cultural adaptation. Educational institutions should provide a complex program on the adaptation of foreign students to enhance their inclusion into the academic and social life of a host country that will help them to acquire appropriate knowledge and obtain professional qualifications [4].

The results of the academic courses largely depend on students' competence in the language of instruction that is usually provided in Ukrainian. According to Article 20 of the Law of Ukraine "On fundamentals of state language policies", a Ukrainian language is an official language that is used on the whole territory of the state in general, and in educational establishments. There is an opportunity of choice of languages for instructions (for instance, English). However, it can be realized in case if learning Ukrainian as the official language is a compulsory subject and is done in the scope that is sufficient for integration into Ukrainian society [6]. While the Ukrainian language is the language of instruction and the language of the courses of most students in the universities; English has been introduced as the language that may be performed in the national higher medical schools in Ukraine since it is the worldwide official language in the world of science. This gives foreign students an opportunity not to be required to take preliminary courses and learn Ukrainian, but study in the English language. However, communication with patients and lecturers, and everyday communication cannot be carried out in English only because most ordinary Ukrainian citizens either do not speak it or prefer to speak Ukrainian as the mother tongue. That is why, Ukrainian language proficiency as the host country language proficiency is one of the main factors that contribute to the successful adaptation and adjustment of foreign students, and is one of the main determinants of academic experience professional performance. The (in)ability to communicate in the host language influences socio-cultural and linguistic adaptation. Acquisition of the basic skills of reading, writing, and speaking of a host country's language additionally contributes to the personal and professional life of foreign students. Moreover, while learning a language of a country of residence, foreign students may acquire vital skills for communicative situations, skills for critical thinking, and skills for independent learning [7].

To enhance students' linguistic competence, educational institutions should develop linguistic and cultural work within the mandatory and special courses of the language departments. According to the European Parliament's Recommendations on Key Competences for Lifelong Learning, the competence in speaking a language of a host country includes knowledge of accepted norms, traditions, values, and customs of society; ability to understand, process, express and interpret the concepts, thoughts,

and feelings in an appropriate range of social and cultural contexts [8]. That is, linguistic competence is very important for foreign medical students since it may give them the necessary basis in mastering the academic knowledge and professional competence required to become a qualified medical specialist.

We consider it important to emphasize that the effects of foreign language acquisition depend largely on adequate contact with language: language becomes easier to learn when a person speaks it frequently. Moreover, language learning in a naturalistic communicative setting is driven by meaningful interaction and a sense of belonging. In comparison with local students who speak Ukrainian at home, in school, with friends; foreign students spend minimum time for speaking Ukrainian: a few hours at classes and a little time in everyday life. Therefore, teachers are also responsible to contribute into a successful adaptation of foreign students providing certain materials and strategies to enhance second language acquisition [10]. Moreover, the use of a mediator language (similarly to the language of instructions) in teaching a foreign language is important since with the help of it the lecturers can explain to students the peculiarities of language phenomena and processes [9].

In any type of adaptation, psychological, linguistic, or socio-cultural, the behavior of foreign students may be described using the following components that influence success: motivation, adequacy, adaptability, authenticity, productivity, level of activity, initiative, self-control, etc. The main factors that may contribute to the successful adaptation of foreign students in the conditions of Ukrainian society and Ukrainian higher education institutions:

- Personally-motivational perspective on the higher education institutions and the process of study being motivated and willing to acquire academic competence.
- Acceptance and understanding of the educational information, tasks, and objectives in Ukrainian or English languages with further willingness to succeed in them.
- Overcoming the language barrier to comprehend information, learn the terms, understand instructions and assessment issues, provide an associative synthesis of the answer to the task, etc. in English or Ukrainian.
- Host country language competence and willingness to communicate to become socio-culturally adapted [12].

There is a need for the in-depth research on foreign students' adaptation to the educational process in the national higher medical schools. The future studies on modern methods of teaching a foreign language as the language of instructions or the language of learning in a medical university, the impact of motivation in adaptation on academic performance, as well as the ways of the assistance of higher education institutions in their adaptation may contribute into the complex social and pedagogical topic of modern foreign students' adaptation.

In the context of what has been described above, a fundamental overhaul of the health care and education system is being prepared. A new era of competitive cooperation will come between practitioners and the technical sector. Training in the use, interpretation and use of data and other digital tools effectively enables health professionals to maintain control over the profession. But the fundamental changes that will take place in medical practice require new skills in working with AI and interdisciplinary teams to integrate digital medicine into everyday clinical practice. These new skills include: Management and supervision of delegated responsibilities within multi-professional health care teams;

Monitoring and interpretation of increasing amounts of patient data generated by ubiquitous and / or „non-negative” health technologies analyzed by AI;  
Mathematical and communication skills needed to understand and convey to patients the meaning of probabilities, including forecasting and analytics.

Gradual changes will not be enough to address these issues: both medical practice and the education of medical professions effectively need to be „reset”. But there are non-technological components of health care that are exclusively human and necessary for the practice and education of the 21st century.

The provision of rehabilitation or occupational therapy services, together with the unique human services that patients need, is likely to be a hallmark of professional practice that has existed for thousands of years but may now be threatened in a future era. If you continue to move downstream, this will lead to the loss of critical opportunities and the risk of being left behind, as the fundamental nature of health care is changing.

Strategic levels of human rehabilitation services declared by WHO:

1. The first level is pre-nosological, based on the understanding that rehabilitation and prevention are organically linked processes. With the beginning of rehabilitation, its preventive direction becomes more pronounced. This level is intended for people who are at risk of organic or functional medical condition or who have asymptomatic manifestations of disease (for example, rehabilitation of people under strong emotional and psychological pressure). Global social problems related to the aging population and the increasing number of cardiovascular and other chronic diseases require a serious adaptation of the health care system today. One of the key areas of such adaptation may be the rapid development and implementation of telemedicine. This is a technology of remote provision of medical services (diagnostic and medical observation, treatment). Opportunity: the rapid spread of telemedicine is based on the development of information and communication technologies. Already today, according to a WHO study, four types of telemedicine services are widely used in developed countries with the necessary infrastructure: remote diagnostics (transmission of digital images of various pathologies (eg, microscopic images of cells) using ICT for interpretation and / or consultation); remote dermatology (for interpretation and / or consultation), transmission of medical information related to the skin condition using ICT); remote psychiatry (mental health assessment and / or video or telephone consultation using ICT). The introduction of telemedicine technology can significantly improve the availability of medical services even at the current level of technological development (mainly in small and inaccessible areas, areas of disasters and natural disasters). The cost of treatment by expanding the scope of home care and reducing the length of hospital stay (or refusal of hospitalization) will be significantly reduced. In addition, existing telemedicine technology can quickly send patient data (such as an electrocardiogram) for decoding directly from an ambulance and receive results even before arrival at the hospital, which greatly increases the efficiency of emergency care.
2. The second level provides disability prevention for patients suffering from acute or chronic forms of the disease, which is currently not complicated by disability.
3. The third level is aimed at reducing the dependence of people with disabilities on the microenvironment in terms of the implementation of their natural functions (self-care, communication, etc.).

Conclusion. It is time for academic medical centers to take full advantage of their unique ability to optimally integrate education, research and patient care into the health education system. It is especially important to educate and protect leaders who

can change institutional culture and behavior. Indeed, the medical profession is no different from other professions, sharing a „bias in identifying difficulties in presenting any careful reconstruction of one’s own discipline.” If this is not done, the question arises as to how these institutions can truly differentiate into the new era of healthcare.

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## EDUKACJA ZDROWOTNA: RZECZYWISTOŚĆ I PERSPEKTYWY

### STRESZCZENIE

Postępująca transformacja wielu aspektów opieki zdrowotnej wymaga dogłębnej oceny najważniejszych zasad praktyki lekarskiej. Te przemiany należy postrzegać, jako szansę dla wszystkich zawodów medycznych i reakcją na reformy, w nowym połączeniu ze społeczeństwem. Opieka zdrowotna jest coraz bardziej zdemokratyzowana: informacje, testy i terapia zostaną połączone w ramach przyspieszonej konwergencji technologicznej. Rola świadczeniodawcy opieki zdrowotnej, który nie jest już jedynym właścicielem zasobu wiedzy, zmienia się dramatycznie i ważne jest, aby pracownicy służby zdrowia dostosowali się poprzez praktykę, edukację i szkolenia, wykorzystując nowe umiejętności, dla uzupełnienia i wzmacnianie wszystkich aspektów opieki. Potrzeba zmian jest konieczna dla zrozumienia, jakimi technologiami medycznymi należy zarządzać. Odpowiedź tkwi w nieuchwytnej naturze ludzkiego ducha, chęci osiągnięcia zdrowia i dobrego samopoczucia dla wszystkich.

### SŁOWA KLUCZOWE

platformy cyfrowe, system ochrony zdrowia, digitalizacja procesów medycznych, kształcenie specjalistów medycznych.



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