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Ukrainian experience of the pedagogical training of medical specialists in the context of European integration processes

Experiencia ucraniana de formación pedagógica de médicos especialistas en el contexto de los procesos de integración europea

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Abstract

Modern European integration aspirations of Ukraine cover various aspects of social development, in particular medicine. Research the newest methods of training medical

workers for the Ukrainian system of training medical workers is an extremely relevant topic. The purpose of the article is to analyze the Ukrainian experience of the peculiarities of pedagogical training of medical workers in the context of European integration processes. The main methods used in the work are general scientific methods (synthesis, analysis, deduction, and induction). The results determined the essence of the main pedagogical components used in the structure of the professional education of medical workers.

The peculiarities of the formation of the pedagogical competence of medical workers in the light of European integration were separately investigated, attention was paid to its main elements, which are important to introduce into the Ukrainian training system and which meet the requirements of the Bologna system. The social and practical aspects of pedagogical training of medical workers, which are already applied as a result of European integration processes in the education of Ukraine, are characterized. The conclusions emphasize the need for further transformations in the field of training medical workers, in connection with the further use of European experience.

Keywords: pedagogical competence, formation, medical workers, Ukraine, European integration.

Resumen

Las modernas aspiraciones de integración europea de Ucrania abarcan varios aspectos del desarrollo social, en particular la medicina. La investigación de los métodos más novedosos de formación de trabajadores médicos para el sistema ucraniano de formación de trabajadores médicos es un tema de gran relevancia. El propósito del artículo es analizar la experiencia ucraniana de las peculiaridades de la formación pedagógica de los trabajadores médicos en el contexto de los procesos de integración europea. Los principales métodos utilizados en el trabajo son los métodos científicos generales (síntesis, análisis, deducción e inducción). Los resultados determinaron la esencia de los principales componentes pedagógicos utilizados en la estructura de la formación profesional de los trabajadores médicos. Se investigaron por separado las peculiaridades de la formación de la competencia pedagógica de los trabajadores médicos a la luz de la integración europea, se prestó atención a sus principales elementos, que son importantes para introducir en el sistema de formación ucraniano y que cumplen los requisitos del sistema de Bolonia. Se caracterizan los aspectos sociales y prácticos de la formación pedagógica de los trabajadores médicos, que ya se aplican como resultado de los procesos de integración europea en la educación de Ucrania. Las conclusiones subrayan la necesidad de nuevas transformaciones en el ámbito de la formación de los trabajadores médicos, en relación con el mayor uso de la experiencia europea.

Palabras clave: competencia pedagógica, formación, trabajadores médicos, Ucrania, integración europea.

1. Introduction

The development of modern medicine implies a permanent renewal of educational approaches since new treatment methods require appropriate coverage for future specialists. Obviously, the main reference point on the way to the transformation of the educational sector in Ukraine will be the European experience, arising from the European integration policy of Ukrainian governments in the XXI century. Integration of Ukrainian medical science in the world community is accompanied by the processes of international convergence, combined with the preservation of national notable features that determine the features of national cultural and educational tradition. Accordingly, the study of peculiarities of the application of this experience in Ukrainian realities is extremely relevant, as well as the reverse process, designed to determine how integration processes positively influence the possibility to apply some forms of training of medical students in European countries. Posing such a question has its basis since the use of various methods of pedagogical training under martial law is an understudied practice. The article aims to analyze the Ukrainian experience of peculiarities of pedagogical training of medical workers in the context of European integration processes. The realization of this goal requires the study of certain aspects related to the functioning of medical education in Ukraine. Accordingly, the main objectives of this research are as follows:

1. Defining the content of the pedagogical component in the structure of medical professionals' professional activities
2. Study of peculiarities of formation of pedagogical competence of medical workers in the light of European integration
3. Characteristics of social and practical aspects of pedagogical training of medical workers on the background of Euro-integration processes in Ukraine

2. Theoretical Framework or Literature Review

A content analysis of contemporary scientific literature is an important part of this theoretical study, the methodological basis of which is drawn mainly from European and American authors. Custers & Cate (2018) characterized the development of medicine in Europe and the United States through the lens of historiosophic reflection. In particular, Laufer et al., (2021) investigated the main contemporary innovations in the medical education environment, pointed out the peculiarities of the use of some distance models in the training of higher education applicants. Lekic et al., (2019) described the meaning and role of evidence-based medicine in education and characterized major transformations in medical practice through the lens of contemporary global challenges. Of value to this study is the work of Roberts (2020), which traced the impact of the Covid-19 pandemic on medical education. Roberts (2020) described key relevant and in-demand medical pedagogical competencies that, in general, can contribute to overcoming various threats. This researcher points out that in higher medical school it is important to introduce the help of volunteer medical students to practical clinical support

as “medical assistants” (p. 241-242). In his opinion, this will not only improve the practical skills of students but also help to increase the workforce in various medical facilities. Ayaz & Ismail (2022) examined key innovative methods and technologies that should be used in medical education. The focus of these experts was on integrating stimulation technology into training programs. Ayaz & Ismail (2022) note that simulation technologies will become especially important in medical education by providing funds for practice and supervised learning by qualified professionals (p. 301).

At the same time, Succar et al., (2021) described the impact of the Covid-19 pandemic on the development of postgraduate medical education in ophthalmology. The authors note that although the pandemic disrupted medical education worldwide, ophthalmology educators quickly transformed their curricula into new and effective virtual platforms. Consequently, although Covid-19 was one of the massive challenges in the history of medical education, it also provided the impetus for new and innovative teaching methods, including those in the ophthalmology field. Mishra et al., (2020) investigated the renewal of medical education curricula as a result of the pandemic. Consequently, the coronavirus outbreak has entailed a rethinking of previously accepted concepts in pedagogical and medical opinion. The leading place in the educational process began to be taken by distance learning. So, many new author's ideas on modern education transformation appeared in scientific literature.

Features of the formation of pedagogical competence of students of medical specialties were characterized by an English researcher (Houldsworth, 2016). At the same time, a team of authors led by Srinivasan et al., (2011) in the study “Learning as competence” investigated the key conditions for the formation of pedagogical skills of future doctors.

Ukrainian researchers have repeatedly addressed the problem of the use of actual methods of training medical students, the application of European experience, and training in medical universities. In particular, Tsekhmister et al., (2021) analyzed the peculiarities of the use of virtual learning technologies in Ukraine against the background of the pandemic's spread. Ukrainian researchers led by Kulbashna et al., (2019) characterized the key relevant competencies of modern medical professionals. The authors focused on the formation of the professional competence of future dentists with the introduction of innovative pedagogical technologies. At the same time, Stechak (2017) thoroughly defined the main conditions for the formation of pedagogical competence in future family doctors, characterized the structure of the pedagogical component, and outlined medical recommendations for the preparation of future family doctors. Sherman et al., (2022) investigated the debatable problem of future distance education. Tsekhmister et al. (2022) justified the importance of studying artifacts in the training of health professionals.

The above-mentioned works provide a valuable basis for this study. Taking into account the European experience of medical education reforming, it is possible to characterize the possible perspectives of medical education development in Ukraine through both theoretical and practical planes.

3. Methodology

The study of the problem of pedagogical training of medical workers through the prism of European integration processes in Ukraine is formed on the use of general theoretical research methods: analysis, synthesis, induction, and deduction. Based on the analysis the research subject is divided into smaller parts: defining the content of the pedagogical component in the system of professional activity of medical workers, defining the main elements of pedagogical competence, characterizing social and practical aspects of pedagogical training of medical workers, researching the main conditions of formation of pedagogical competence, etc. By means of synthesis, these issues are combined and conclusions are formed. Based on the axiological method the transition from general theoretical statements to the formation of our concept of pedagogical training of specialists of medical specialties is made. As a result of using content-analysis, the study of modern scientific sources on the problem was made, the little-studied and topical issues of Ukrainian medical education were characterized.

With the help of the prognostic method of research, it was possible to characterize the main directions of the development of structural training of medical workers in the context of the European integration aspirations of Ukraine.

The results of the study are based on the use of official materials:

1. Law of Ukraine on Higher Education of 2014 (Law No. 1556-VII, 2014).
2. Strategy for the Development of Medical Education of Ukraine from 2019 (Ministry of Health of Ukraine, 2019)

4. Results and Discussion

In order to highlight the Ukrainian experience of training medical workers for pedagogical activity, it is important to clarify the content of the pedagogical component in the structure of the professional activity of medical workers. On the other hand, a more detailed analysis will be required to investigate the peculiarities of the formation of pedagogical competence of medical workers in the light of European integration and the characteristics of socio-practical aspects of pedagogical training of medical workers against the background of European integration processes in Ukraine. The specified aspects are partially covered, they will also be explained in the results of the article.

The content of the pedagogical component in the professional activity of medical workers

According to modern European standards, one of the types of medical and preventive work of medical personnel is the education of patients and their families on health support issues at different ages (Das et al., 2022). Separate in this system are counseling and education on care (or self-care), prevention of certain diseases, formation and

implementation of educational programs on healthy lifestyles, etc. (Kulbashna et al., 2019). Consequently, modern scientists in the pedagogical component of medical practice distinguish such components as diagnostic-predictive, therapeutic, preventive, psychological-corrective, advocacy-educational, analytical-research, organizational-operational, evaluative-reflexive (Stechak, 2017). These components are schematically depicted in Figure 1.

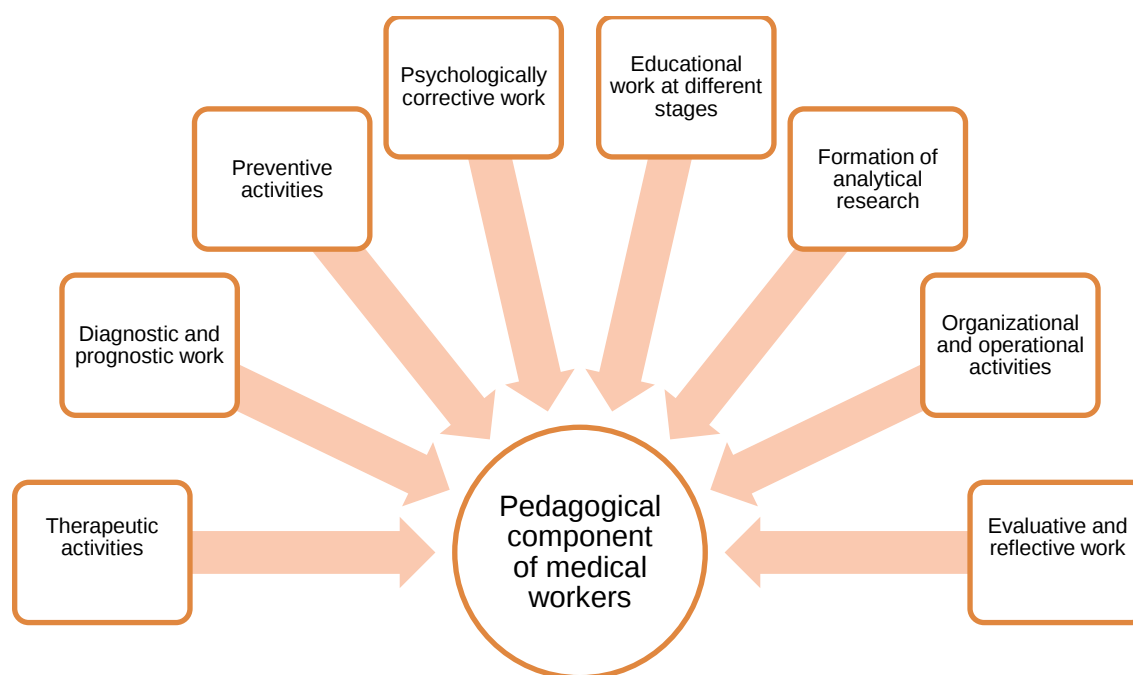


Figure 1. Components of the pedagogical component of health workers
Developed by the authors of the article

The activities of health professionals aim to meet patients' demands for a health-promoting process by providing them with professional medical support (Papapanou et al., 2021). The latter includes the pedagogical part of professional work, which includes the following components: therapeutic education of the patient and his family on effective health support or care, patient education on avoiding complications or trauma, formation of interpersonal pedagogical interaction, preventive medical outreach work containing bright pedagogical elements, management of medical and educational activities of patients, etc. (Stechak, 2017).

We believe that unpreparedness to perform some of these elements reduces the effectiveness of the social work of medical professionals (See Table 1).

Table 1.
Features of the implementation of pedagogical activity of physicians

Name of pedagogical activity of physicians	Features of implementation
Educating patients and families about effective health support	Introduction to the latest methods of preventing or treating disease. The main goal is to impart knowledge and build skills for the development of proper treatment and care. In European countries, group training is valuable, in which healthcare providers counsel all who wish to do so. Also effective is patient education as a set of directed activities to support their treatment.
Formation of pedagogical interaction with patients	Forming a relationship of trust with the patient. Achieving mutual understanding ensures professional counseling, prevention, or treatment of patients.
Medical and explanatory work	In the EU countries, group work methods are used, which involves educating patients about their health.
Management and diagnosis of patients' learning activities	Pedagogical components of the professional work of the family physician are manifested in the modeling of natal constructive situations and management of patient's reflections when solving them. For the effective realization of this medics should also be fluent in pedagogical diagnostics, methods of control.
Self-training of medical workers	In the system of pedagogical activity of medics, it is important to form aspiration and ability to stable self-improvement of both medical, pedagogical, and psychological competencies.

Adapted from Pedagogical training of the future of family doctors at the medical university, by Stechak (2017, 38-43)

Consideration of pedagogical competence in the system of professional activity of medical workers contributes to the formation of a new awareness of medical activity, however, also based on the use of modern methods of organization of preventive work with the population, methods to promote healthy habits (Jenkins et al., 2021).

Pedagogical competence of medical workers in the light of European integration

According to the "Concept of reforming the system of medical training in Ukraine and bringing it in line with the requirements of the Bologna Declaration", the main principles of medical training are defined, among which the need to form common values, moral, ethical, and legal views are highlighted. Healthcare professionals must guarantee the observance of the medical secrets of their patients, be correct, humane, obligatory, and proper in their work (Al-Balas et al., 2020). Given these European requirements for the Ukrainian training system, educational and professional training programs for healthcare professionals (primarily their regulatory parts) should also include humanitarian and

socio-economic training (educational and professional orientation) (Ministry of Health of Ukraine, 2019)

The essence of these disciplines should be constant for all educational and scientific training programs (Law No. 1556-VII, 2014). In particular, this Concept states that, if we compare the Ukrainian education system with European countries, healthcare professionals in Ukraine are overloaded with various theoretical disciplines of humanitarian orientation, the vast majority of which are not known to European medical professionals, because the educational system of the European Union does not provide for their implementation (Mishra et al., 2020). Further implementation of the requirements of the “Bologna Declaration on the Creation of a Common European Education Area” will require recourse to international norms and approaches that are widely used in the professional training of future health professionals (Stechak, 2017). For this purpose, the Ukrainian medical education system will require significant changes, especially in the practical orientation of educational work (Kulbashna et al., 2019).

At the same time, structural changes also need a general attitude towards pedagogical competence, which is perceived at a different level in European countries (Tsekhmister, et al., 2021). At the current stage of development in Ukraine, the pedagogical competence of medical workers should be defined according to the European interrelated functional components (motivational-value, educational, professional-communicative, organizational-technological, reflexive) (Stechak, 2017). The motivational-value component is formed as a result of the identification of motivation as a special state of personality, which pushes it to identify a certain activity in the pedagogical case, leads to the behavior to implement a successful treatment. The educational component of pedagogical competence allows health professionals to perform their professional duties (Ali, 2022). In particular, based on knowledge, there is a need to understand the specifics of applying different methods and approaches to perform practical tasks, designing future actions and their consequences, and intensifying cognitive activity.

The professional-communicative component of health professionals is designed to qualitatively improve communication skills and abilities, which are also important for successful professional-pedagogical work (Stechak, 2017). Usually working with patients, their relatives, organizing educational activities takes place together with interpersonal communication aimed at changing and correcting behavioral patterns (Succar et al., 2021). Interpersonal communication of health professionals during the treatment and prevention process additionally ensures its effectiveness but requires the skills of empathy, awareness, and adequate modeling of the characteristic features of the psychology and behavior of the interlocutor, to influence it (Houldsworth, 2016).

The need to highlight the organizational and technological component is explained by the fact that the work of health professionals requires the ability to organize and conduct the educational process to teach and educate patients, their families, caregivers (Stechak, 2017). Actualization of such capabilities occurs through the use of aggregate methods and formed mechanisms for their practical implementation with a pedagogical purpose.

This component will additionally contribute to the growth of the quality of training, allow successful interaction and achievement of the planned results.

The level of medical workers' awareness of themselves as subjects of professional activity, development of their self-assessment, understanding of consequences and results of their work forms the reflexive component. It becomes the center for combining all other components, because reflexion not only forms the purpose and awareness of the main tasks of the educational process, projects the evaluation criteria for real achievements, determines the motives of work, but also allows periodic correction of the pedagogical direction of training, establishing new consequences of training, etc., 2017. Sufficient mastery of these components is able to bring the training of medical professionals to a higher level, which will be fully invested in the mainstream of European integration.

Social and Practical Aspects of Pedagogical Training of Medical Workers: New Challenges

The professional training of medical professionals of different specialties through the prism of European integration processes is naturally combined in the social content of education. Medical work consists of communication with people, so the social component aims to increase mastery of the learning material, the ability to perform professional tasks and to carry out one's work in general (Roberts, 2020). Also, this part of the training will develop a diverse personality, which also affects the success or failure of academic work (Kulbashna et al., 2019). All of the above opportunities are quite individual and depend on the activity of the individual, their motivation in acquiring knowledge and skills, learning techniques, and communication with teachers and other students (Srinivasan et al., 2011). The professional-social aspect of learning should be performed through the use of certain established forms of work of all participants in the learning process, which will allow a gradual transition from theoretical assimilation of material to its technological essence, i.e., real professional activity (Zehry et al., 2011). According to European practices, the gradual transition from reproductive, passive forms of learning to active use of learning and technological and professional work takes place through changes in the motive and goals of knowledge acquisition. Such changes depend on the methodological conditions of medical training, the formation of scientific and practically professional individual portraits (Ayaz & Ismail, 2022). Therefore, the reciprocal relationship between knowledge acquisition and practical work occupies an important place in learning, given the European experience. Therefore, the training of medical professionals is directed towards specific knowledge and skills that training forms the diffusion of new information with prior knowledge and personal life experience, knowledge acquired through self-education (Kulbashna et al., 2019). The composition of the training, thus, will contribute to the motivation to continue to obtain professional knowledge in the chosen specialty.

Basic disciplines have also been shown to be influential in the development of interest in medical specialty, learning, and work. In particular, communicative skills, information

competence is formed by mastering foreign languages. In Ukrainian realities, working with foreign resources and foreign professional literature is quite a defining phenomenon, since Ukraine's European integration aspirations put on the agenda the need to use exactly European methods and practices. For many teachers at Ukrainian medical universities, these approaches still remain underutilized because the language barrier has long prevented them from taking full advantage of these opportunities (Sherman et al., 2022). Studying foreign languages would allow mastering the achievements of the modern intercultural world, improving and developing sociocultural communication skills, communication, and the ability to coexist and work in the possible conditions of a multicultural society, an integrated educational space (Houldsworth, 2016). Mastering foreign languages has an impact on the formation of the worldview, life position of the individual, life goals, and ways of their implementation. At the same time, in addition to the cultural function, the economic reason for the active study of foreign languages is important. Given the realities of today, the military aggression of the Kremlin regime, and other destructive factors, the outflow of the best medical professionals abroad is real, given the need for qualified, multilingual, highly educated workers. Clearly, the appropriate level of foreign language proficiency for medical professionals is an important personal advantage that provides additional chances for a job in the labor market (Papapanou et al., 2021). These are significant personal characteristics that include the ability to communicate on a business level in professional and social fields, to create a creative learning environment, and to increase intellectual and cultural horizons. Such a toolkit of cross-cultural communication and collaboration will unequivocally enhance the quality, accessibility, and mobility of university training for future health professionals (Tsekhmister et al., 2021).

Targeted pedagogical training of medical professionals should include the application of the latest European methods and techniques of teaching activities, formation of theoretical and practical classes on pedagogical training, taking into account the modern paradigms of development of psychological and pedagogical disciplines, improvement of technical and material, and laboratory support.

An additional relevant opportunity to improve the training of health professionals is the development of synchronous and asynchronous education. While synchronous learning is used all the time and its strengths are obvious, the possibilities of asynchronous learning are still underestimated. Due to the military aggression of Russian troops and the destruction caused by them, the use of asynchronous learning methods has shown to be highly effective, despite the complexity of the situation in education. The use of asynchronous education has become a challenge for teachers, because such experience of its use was almost absent. The active use of this form of training, however, has demonstrated the best effectiveness of combined synchronous and asynchronous classes in the process of professional training of medical workers. This combination allows to successfully combine the acquisition of theoretical knowledge and practical skills against the background of military realities.

5. Conclusions

The European integration aspirations of Ukraine have actualized changes in the system of medical training, the need to harmonize the basic principles and specific methods of theoretical training, and the formation of practical skills. For example, there is a gradual reassessment of pedagogical components that make up the structure of professional training of medical workers. Certain elements that meet the requirements of the Bologna system are included in the educational process of medical workers in light of European integration. However, full integration of the Ukrainian system of education and training of medical workers still has not taken place. At the same time, the social and practical aspects of pedagogical training of medical workers, applied as a result of Eurointegration processes in Ukrainian education, are characterized. Let us note the use of modern Ukrainian educational and scientific programs that address socio-psychological training, development of communication, etc. This is extremely important from a professional point of view since similar experience is actively used in European countries. In particular, in the context of social and practical training of medical workers in Ukraine, several contexts stand out: the appeal to practical activities, the search for opportunities to motivate higher education applicants for their next job, the emphasis on learning foreign languages, which gives advantages both in learning and on the possibilities of potential job search in the future. These contexts will require additional development in the future because even in a short period of time the quality of knowledge gained has increased.

6. Bibliographicreferences

- Al-Balas, M., Al-Balas, H. I., Jaber, H. M., Obeidat, K., Al-Balas, H., Aborajooh, E. A., & Al-Balas, B. (2020). Distance learning in clinical medical education amid COVID-19 pandemic in Jordan: current situation, challenges, and perspectives. *BMC Medical Education*, 20(1). Doi: 10.1186/s12909-020-02257-4. URL: <https://bmcmmededuc.biomedcentral.com/articles/10.1186/s12909-020-02257-4>
- Ali, S. (2022). The effectiveness of immersive technologies for future professional education. *Futurity Education*, 2(2). <https://doi.org/10.57125/FED/2022.10.11.25>
- Ayaz, O., & Ismail, F. W. (2022). Healthcare Simulation: A Key to the Future of Medical Education – A Review. *Advances in Medical Education and Practice*, 13, 301–308. <https://doi.org/10.2147/amep.s353777>
- Custers, E. J. F. M., & Cate, O. t. (2018). The History of Medical Education in Europe and the United States, With Respect to Time and Proficiency. *Academic Medicine*, 93(3S), 49-54. <https://doi.org/10.1097/acm.0000000000002079>
- Das, T. M., Kaur, G., Nematollahi, S., Ambinder, D., Shafer, K., Sulistio, M., & Goyal, A. (2022). Medical Education in the Digital Era—A New Paradigm for Acquiring Knowledge and Building Communities. *JACC: Advances*, 1(2), 100031. Doi: 10.1016/j.jacadv.2022.100031
- Houldsworth, A. (2016). A Reflection on Some Key Pedagogical Competencies, Valuable to the Role of the Medical Educator. *Journal of Contemporary Medical Education*, 4(1), 26. Doi: 10.5455/jcme.20160315115157

- Jenkins, T. M., Underman, K., Vinson, A. H., Olsen, L. D., & E. Hirshfield, L. (2021). The Resurgence of Medical Education in Sociology: A Return to Our Roots and an Agenda for the Future. *Journal of Health and Social Behavior*, 62(3), 255-270. Doi: <https://doi.org/10.1177/0022146521996275>
- Kulbashna, Y., Iryna, S., & Zakharova, V. (2019). Future doctors' professional competence formation in medical universities with innovative pedagogical technologies. *Open Journal of Social Sciences*, 07(03), 231–242. Doi: <https://doi.org/10.4236/jss.2019.73020>
- Lekic, L., Lekić, A., Alibegović, E., Rahimić, J., & Maša, A. (2019). Analysis and Impact of Evidence Based Medicine in the Process of Education and Decision Making in Medical Practice. *Research Journal of Pharmacology and Pharmacy*. <https://doi.org/10.28933/rjpp-2019-07-1406>
- Laufer, M., Leiser, A., Deacon, B., Perrin de Brichambaut, P., Fecher, B., Kobsda, C., & Hesse, F. (2021). Digital higher education: a divider or bridge builder? Leadership perspectives on edtech in a COVID-19 reality. *International Journal of Educational Technology in Higher Education*, 18(1). <https://doi.org/10.1186/s41239-021-00287-6>
- Law No. 1556-VII. About higher education. Verkhovna Rada of Ukraine, December 2014. Retrieved from <https://zakon.rada.gov.ua/laws/show/1556-18#Text>
- Ministry of Health of Ukraine (2019, February 27). Medical education development strategy. Retrieved from <https://moz.gov.ua/strategija-rozvitku-medichnoi-osviti>
- Mishra, K., Boland, M. V., & Woreta, F. A. (2020). Incorporating a virtual curriculum into ophthalmology education in the coronavirus disease-2019 era. *Current Opinion in Ophthalmology*, 31(5), 380–385. Doi: <https://doi.org/10.1097/icu.0000000000000681>
- Papapanou, M., Routsis, E., Tsamakis, K., Fotis, L., Marinos, G., Lidoriki, I., ... Schizas, D. (2021). Medical education challenges and innovations during the COVID-19 pandemic. *Postgraduate Medical Journal*, 98(1159). Doi: <https://doi.org/10.1136/postgradmedj-2021-140032>
- Roberts, C. (2020). How medical education can help in a COVID -19 crisis. *The Clinical Teacher*, 17(3), 241–243. <https://doi.org/10.1111/tct.13183>
- Sherman, M., Puhovskiy, E., Kambalova, Y., & Kdyrova, I. (2022). The future of distance education in war or the education of the future (The ukrainian case study). *Futurity Education*, 2(3). <https://doi.org/10.57125/FED/2022.10.11.30>
- Srinivasan, M., Li, S.-T. T., Meyers, F. J., Pratt, D. D., Collins, J. B., Braddock, C., & Hilty, D. M. (2011). "Teaching as a competency": Competencies for medical educators. *Academic Medicine*, 86(10), 1211-1220. Doi: <https://doi.org/10.1097/acm.0b013e31822c5b9a>
- Stechak, G. (2017). Pedagogical training of the future of family doctors at the medical university. (PhD's thesis). Lviv State University of Life Safety DSNS Ukraine, Lviv. URL: https://ldubgd.edu.ua/sites/default/files/3_nauka/svr/04/d_stechak.pdf
- Succar, T., Beaver, H. A., & Lee, A. G. (2021). Impact of COVID-19 pandemic on ophthalmology medical student teaching: educational innovations, challenges, and future directions. *Survey of Ophthalmology*. Doi: <https://doi.org/10.1016/j.survophthal.2021.03.011>

- Tsekhmister, Y. V., Konovalova, T., Tsekhmister, B. Y., Agrawal, A., & Ghosh, D. (2021). Evaluation of Virtual Reality Technology and Online Teaching System for Medical Students in Ukraine During COVID-19 Pandemic. *International Journal of Emerging Technologies in Learning (IJET)*, 16(23), 127–139. Doi: <https://doi.org/10.3991/ijet.v16i23.26099>
- Tsekhmister, Y., Stepanenko, V., Konovalova, T., & Tsekhmister, B. (2022). Analysis of physicochemical natures of modern artifacts in MRI. *International Journal of Online and Biomedical Engineering (iJOE)*, 18(03), 89-100. Doi: <https://doi.org/10.3991/ijoe.v18i03.25859>
- Zehry, K., Halder, N., & Theodosiou, L. (2011). E-Learning in medical education in the United Kingdom. *Procedia - Social and Behavioral Sciences*, 15, 3163-3167. Doi: <https://doi.org/10.1016/j.sbspro.2011.04.265>