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TELEMEDICINE IN POLAND AND UKRAINE – CURRENT STATE AND FUTURE PROSPECTS

Introducton

The article discusses the issues of the current and future use of telemedicine services in Ukraine and Poland. Obviously, the situation in both countries is different but some phenomena are shared. This refers to the issues of ageing societies and the shortages in medical staff which emerge at least in some areas of both countries¹.

Recently, Ukraine adopted legal regulations regarding telemedicine. The article is an attempt to present how they differ from the Polish regulations and how they are implemented in Ukraine. The article presents the most important conclusions resulting from a comparative study of teaching systems at medical universities in the two countries with regard to the issues in question.

¹ Petiuenko A., Kańtoch A., Michalik I., *Perspective modification of medical education in the sphere of telemedicine in Ukraine based on experience gained during professional internships in Poland*. Bio-Algorithms and Med-Systems, 14, 2018

1. Telemedicine in Poland – a history outline of legal regulations

Telemedicine² as a form of distant healthcare is applied in several countries in various scope. Most commonly, it supplements diagnostics or the service that is already offered. This was also the case in Poland. However, although distant consultations between healthcare entities were considered for a long time to comply with the regulations, distant healthcare services were available but without a clear legal regulation that would legalize this state of affairs.

After several years of the lack of regulations that would accept this kind of service as a fully legal form of contact between a representative of medical profession and a patient, distant healthcare services was legally regulated. Medical activity consists in offering healthcare services. Such services can be also received through ICT or communication systems³. Regulations have been introduced that make it possible to offer the services with the application of telemedicine by some medical professions⁴. This concerns doctors, dentists, nurses, midwives and some activities of pharmacists.

Moreover, the definitions of the profession of a physician and dentist have been changed. The above professions consist in providing healthcare services by persons with certified qualifications. The services include: health examination, diagnosis and prevention, treatment and rehabilitation of patients, medical advice, as well as issuing opinions and medical certificates and can be, among others, provided through ICT or communication systems⁵. The regulations provide for issuing certificates of health of particular persons after a direct examination or the examination using ICT or communication systems.

Nurses and midwives can also pursue their professions through ICT or communication systems. However, there was no adjustment of regulations on other medical professions including paramedics, physiotherapists and laboratory diagnosticians. Nevertheless, the lack of adjustment should not be interpreted as the basis for questioning the possibility to practice particular jobs with the application of ICT or communication systems as the act on medical

² Telemedicine is a wide concept. The text mostly concerns teleconsultations.

³ M. Chojecka, A. Nowak, *Telemedycyna na tle polskich regulacji prawnych – szansa czy zagrożenie?*, Internetowy Kwartalnik Antymonopolowy i Regulacyjny, Warszawa 2016.

⁴ Act of 15 April 2011 on medical activity, Art.3, Journal of Laws 2011, No.112, item 654

⁵ Art.2, item 1(4) of the Act of 5 December 1996 on doctors and dentists professions, Journal of Laws 1997, No. 28, item 152 .

activity mentioned before is of decisive significance⁶. It should be noted that some newly developed sector regulations provide for the application of telemedicine technologies.

Basic healthcare is the area which constitutes a fundamental form of medical care over patients. Its objective is to provide healthcare to patients and their families and to coordinate medical care within the healthcare system. The coordination covers all the stages and elements of the process with the application of ICT systems, electronic communication means or publicly available telecommunication services, with a particular consideration of the quality and effectiveness of the services provided⁷. Moreover, the regulations concerning treatment with blood and its components in hospitals⁸ allow for distant authentication of test results under conditions specified in regulations.

The basic factor that is indispensable for the dissemination of medical services in a broad sense that use telemedicine technology is their introduction to the services contracted by the National Health Fund (NFZ). First legal steps have been taken to make such services possible⁹, i.e. possibility was introduced to conduct cardiology and geriatric teleconsultations with the application of telemedicine equipment.

Barriers with regard to the identification and authentication of service providers and of patients (in the cases when the service is settled from the pool of public funds) are a serious problem that limits the use of the full range of telemedicine services. Tools should be introduced that enable the identification and authentication of people and medical documents in ICT networks. The system will be able to function to its full potential if in the course of the development of the national identity system steps are taken in the nearest future that will enable the confirmation of eligibility to provide particular services and the confirmation of the sources that finance the service.

The first step in this direction is to implement the identification tools in Poland and EU in compliance with the *Regulation of the European Parliament and of the Council on electronic identification and trust for electronic transactions in the internal market*, (the eIDAS regulation). The next step is the identification of all persons that provide medical services either within or without an insurance contract. The person or entity that is provided with a service must be sure that the provider is a licensed entity which employs professionals. Unfortunately,

⁶ *Jak skutecznie wykorzystać potencjał telemedycyny w polskim systemie ochrony zdrowia?* Raport. Fundacja Telemedyczna, Warszawa 2018.

⁷ Act of 27 October 2017 on basic healthcare, Journal of Laws 2017, text No. 2217.

⁸ Regulation of the Minister of Health of 16 October 2017 on the treatment with blood and its components in healthcare entities offering on-site and 24/7 health services, Journal of Laws 2017, text No. 2051

⁹ Ordinance No. 63/2015/DSOZ 30-09-2015 of the President of the National Health Fund

the solutions recommended by eIDAS cannot be implemented currently in Poland before tools are developed that ensure a security level sufficient for the healthcare system. In the long-term prospect it is going to be an ID card with a processor.

The report on the determinants of telemedicine development¹⁰ in Poland is an important document that deals with the issues of telemedicine in a complex way. According to its authors “there is no well-based definition of e-medicine or telemedicine in Polish legislation”. However, the authors provide the most commonly used definition according to which “telemedicine is the transfer of medical information from one remote location to another by using electronic communication to prevent diseases, maintain patients’ health, ensure and monitor their health care, educate patients and people who provide them with health care and to support healthcare staff in other disciplines. Telemedicine means distant diagnosis, consultation and treatment that can be used synchronously (in real time) or asynchronously”¹¹.

2. Telemedicine in Ukraine – legal environment

Some interesting conclusions can be drawn from the comparison of the statutory definitions of telemedicine in Poland and Ukraine. The hierarchy of legal acts in Ukraine is as follows: the Constitution of Ukraine, international agreements, legislative acts of Ukraine, decrees of the President of Ukraine, resolutions and regulations of the Cabinet Council of Ministers, other normative legal acts.

Telemedicine in Ukraine obtained legal basis after the adoption of the regulation of the Ukrainian Ministry of Health *on the endorsement of regulatory documents on the implementation of telemedicine in health care*¹². The regulation includes the definition of telemedicine: “telemedicine is a complex of activities and technologies applied in the provision of medical care services with the use of distant communication means in the form of electronic information sharing”¹³. The Ukrainian *Act on the National Digitization Program* states that “information technology is a set of information processes purposefully organized with the

¹⁰ J. Bujok, R. Gierek, R. Olszanowski, M. Skrzypek, *Uwarunkowania Rozwoju Telemedycyny w Polsce. Potrzeby, bariery, korzyści, analiza rynku, rekomendacje. Raport zespołu ekspertów Krajowej Izby Gospodarczej i Izby Gospodarczej Medycyna Polska*, Warszawa 2016.

¹¹ Ibid.

¹² Про затвердження нормативних документів щодо застосування телемедицини у сфері охорони здоров'я: Наказ МОЗ України №681 від 19.10.2015 р.

¹³ Ibid.

application of computer technology which ensures prompt data processing and searching, distribution of data and the access to information sources independently of their location”¹⁴.

Pursuant to the act on the *Fundamentals of Ukrainian health law*¹⁵ every citizen of Ukraine is eligible to healthcare which provides, among others, “information about available medical services through telemedicine” and “the assurance of healthcare through telemedicine”. Under the law, medical services are to provide patients through telemedicine with doctor consultations, diagnostics, distant treatment with the application of communication means, including electronic sharing of information and videoconferences. Medical assistance through telemedicine is provided in order to ensure timely access to quality healthcare in the cases when distance and time are crucial factors that justify its application. The provision of healthcare through telemedicine is conducted with the use of teleconsultations, case teleconferences, telemetry, household teleconsultations, including medical procedures and surgeries. Teleconsultations, case teleconferences, telemetry, household teleconsultations, including medical procedures and surgeries that are conducted with the application of electronic and software resources can be recorded, including audio and video recordings in the way defined by a specified central executive authority that develops and implements the State healthcare policy¹⁶.

The act *On the improvement of the availability and quality of medical healthcare in rural areas*¹⁷ is an example of the adaptation of telemedicine solutions to the reality of healthcare. Its priority is to “implement modern medical care technologies in rural areas, particularly with the application of telemedicine, especially when distance and time are crucial factors in the provision of medical care, and to provide adequate resources to implement medical care through telemedicine (consultancy in the areas of telemedicine, medical teleconsultations, telemetry and household teleconsultations)”¹⁸. In practice, the objective is to regulate the relations related to the availability, effectiveness and quality of healthcare in rural areas. Pursuant to the regulations of the act, there are plans to implement in Ukraine a network of medical telecentres in village clinics where, when necessary, doctors will be able to provide consultations or diagnostic and

¹⁴ Про національну програму інформатизації: Закон України, Відомості Верховної Ради України (ВВР), 1998, N 27-28, ст.181 від 04.02.1998 № 74/98-ВР.

¹⁵ Основи законодавства України про охорону здоров'я: Закон України від 19 листопада 1992 р. № 2801-ХІІ // Відомості Верховної Ради України. - 1993. - № 4. - Ст. 19.

¹⁶ Основи законодавства України про охорону здоров'я: Закон України від 19 листопада 1992 р. № 2801-ХІІ // Відомості Верховної Ради України. - 1993. - № 4. - Ст. 19.

¹⁷ Про підвищення доступності та якості медичного обслуговування у сільській місцевості: Закон України № 2206-VIII // Відомості Верховної Ради (ВВР) – 2018. № 5. - ст.32.

¹⁸ Ibidem

therapeutic assistance through videoconferences. The act provides for the use of e-prescriptions. On the whole, the act obliges healthcare entities to implement telemedicine on a large scale. According to the act, the State provides the development of the necessary ICT infrastructure and technology (including broadband access to the Internet, the software and hardware) to ensure the implementation and functioning of e-health, e-prescriptions, basic medical services, medical support and specialist services as well as medical rehabilitation with the application of telemedicine.

The Ukrainian Council of Ministers introduced amendments to the *List of paid services provided in the state healthcare entities and schools of higher education*. Following the government decision, medical entities can provide medical care which includes “laboratory, diagnostic and consultation services on request of the citizens and without doctor referrals, including telemedicine services, household medical assistance including telemedicine services (diagnoses, treatment, manipulations, consultations), medical care, including telemedicine services”¹⁹.

The Ukrainian legislation uses the term *household teleconsultation* and, which is interesting, this differs from the concept of *telemedicine consultation*. Household teleconsultation is applied in the cases of patient’s independent contact with a doctor through a video transmission, a telephone (either a mobile or a landline phone) or the Internet (e-mail, websites, etc.) as well as in the cases when patient’s health is monitored by a doctor in the course of providing medical assistance. During a household teleconsultation, patients can give their telemetric data to the doctor or share the information about their health from their electronic means as well as any other information with their agreement. The information provided in the course of a household teleconsultation is not sufficient for a telemedicine consultation except for the cases when the consultation concerns an image that is saved with the application of the telemedicine software and hardware resources²⁰. Thus, patients are responsible for the data they disclose to the doctor during household teleconsultations that are conducted on the phone or internet communicators (*Skype, Viber*, which are not dedicated telemedicine applications)

¹⁹ Перелік платних послуг, які можуть надаватися в державних та кому-нальних закладах охорони здоров’я, вищих медичних навчальних закладах та науково-дослідних установах, затверджений постановою КМУ від 17.09.96 р. № 1138.

²⁰ Про затвердження нормативних документів щодо застосування телемедицини у сфері охорони здоров’я: Наказ МОЗ України №681 від 19.10.2015 р.

The above analysis of legal regulations in the Ukrainian healthcare system leads to the conclusion that the telemedicine in this country is better regulated than in Poland. However, this does not mean that telemedicine in Ukraine is better developed than in Poland

Ukraine does not follow medical data standards on the state level and practically does not keep medical registries. The reform of the Ukrainian healthcare system aims at a prompt and widespread implementation of ICT systems. Quite recently an electronic healthcare system has started²¹. It consists of a central component (which is responsible for centralized data storage and processing) and numerous subordinate medical information systems that can be selected by healthcare entities. The registration of users to the systems is conducted through these systems with the application of the electronic digital signature in compliance with the act "On electronic digital signature"²².

3. Education model of medical specialists in Ukraine – telemedicine and e-health

Ukraine is one of the biggest European countries. Several towns and villages still do not have the access to hospital care; there are also shortages in medical specialists that are trained in telemedicine technologies, which would ensure the access of high level medical care to remote places in the country. What is more, the knowledge on telemedicine and e-health that is provided during the vocational training of medical specialist is not sufficient and adequate to the actual needs of the healthcare system. The Ukrainian medical staff do not always want to use telemedicine technologies and the graduates of medical universities are not aware of the consequences and real effects of its implementation. At present, there are telemedicine projects under implementation in the Ukrainian medical care system that are dedicated mainly to hospitals and healthcare employees (but not directly to patients). Thus, the current situation results in the demand for medical specialist who are necessary to fulfil the above tasks.

The training of the future medical staff with regard to ICT is conducted in Ukraine under the acts *On higher education* (2104), *On national digitization program* (1998), *On distant learning* (2013), *Concepts of public health in Ukraine* (2000), *Concepts of the reform of medical education of doctors in Ukraine and its adaption in compliance with the Bologna Declaration* (2005), *Concepts of the development of higher medical education in Ukraine* (2008), *Concepts*

²¹ Про державні фінансові гарантії надання медичних послуг та лікарських засобів. Закон України від 19 жовтня 2017 р. № 2168-19 // Відомості Верховної Ради України. - 2018. - № 5. - Ст. 31.

²² Про електронний цифровий підпис Закон України від 22 травня 2003 р. № 852-IV // Відомості Верховної Ради України. - 2003. - № 36. - Ст. 276.

of healthcare system digitization in 2013-2018, and others. The above regulations emphasize the need for the modernization of higher medical education, for updating the syllabuses of courses that train future medical specialists and implementing innovative technologies, especially computer telemedicine systems and electronic educational resources

The analysis of the current educational system in medical universities in Ukraine shows that the syllabus:

- does not provide the development of a systematic and overall knowledge background in the area of the application of telemedicine technologies in the future professional career;
- does not focus sufficiently on providing the knowledge on database structures, information networks, and the organization of the work of ICT systems with regard to future professional activities;
- does not provide an adequate development of a positive and stable motivation of students to be ready to work with the application of telemedicine technologies.

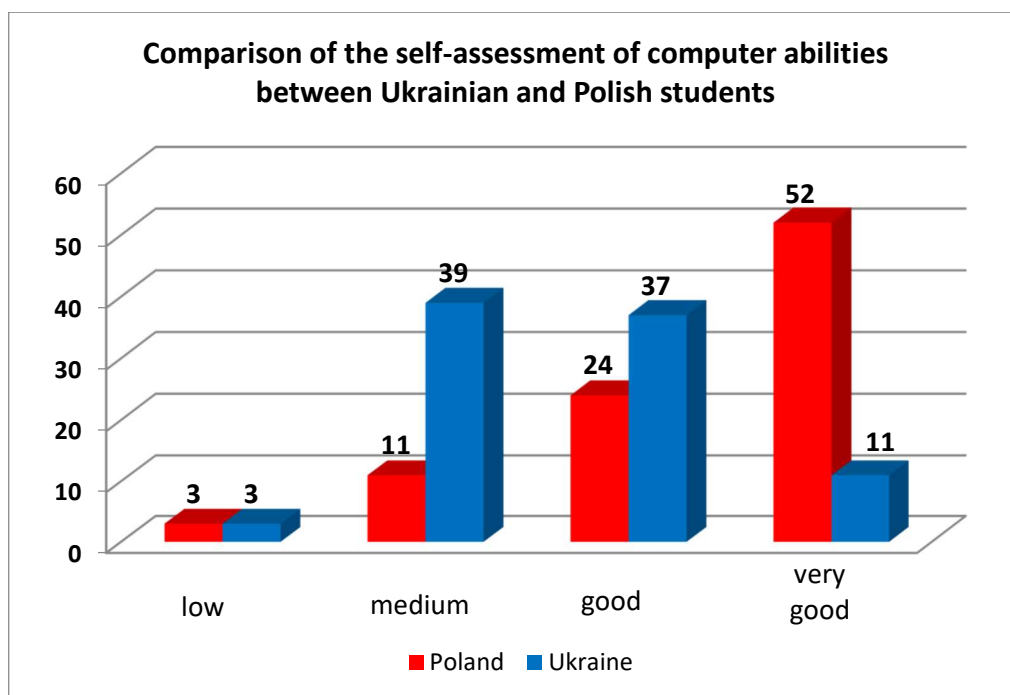
Despite the fact that teaching the fundamentals of medical informatics, telemedicine and e-health is provided by the syllabuses of educational and professional training for medical students in Ukraine, the practice shows a lack of desire of doctors to use the above tools as well as their insufficient ICT abilities. The education of future doctors in developed countries is directed towards training in telemedicine and e-health; this refers, for example, to Poland. The Polish medical care system and higher medical education are active in the field of issues related to telemedicine and e-health. The success can be achieved when a new format of education of medical specialists in various specializations is developed.

According to a comparative analysis of the competencies of medical students to use actively ICT technologies in healthcare, the educational outcomes with regard to ICT technologies are rather similar²³. Polish doctors are required to possess competency to use telemedicine as a tool that supports their work. Ukrainian nurses should have and constantly update their knowledge and abilities in the range of the latest information technologies, while Polish nurses should have competencies in the range of information management systems, databases and statistical analysis (the requirements do not mention modern ICT technologies and telemedicine).

²³ А. Петюренко, Формування готовності студентів медичних коледжів до використання інформаційних технологій у професійній діяльності [Текст] : дис. на здоб. наук. ступ. канд. пед. наук : 13.00.04 - теорія і методика професійної освіти. Кіровоград: Кіровоградський держ. пед. ун-т ім. В. Винниченка, 2014.

The analysis included a survey in which students from Poland and Ukraine expressed their views on telemedicine. A total number of 180 students of medical studies participated in the survey: 90 students from Ukraine and 90 from Poland. The Ukrainian respondents were students of medicine, medicine-dentistry and nursing programmes in the E.J. Muchin Medical College in Kirovohrad and the National Donetsk Medical University in the Kropyvnytskyi region. The Polish respondents were students of the Jagiellonian University Medical College who studied medical, medical-dentistry and public health programmes. The results showed that the majority of the Polish students assessed their computer abilities as “very good” (52 respondents or “good” (24 respondents). As regards the Ukrainian students, the results were 39 and 37, respectively – see Figure 1.

Figure 1. Comparison of the self-assessment of computer abilities between Ukrainian and Polish students



Source: Authors' research.

The most interesting difference in the replies of the Polish and Ukrainian students appeared in the case of the question about the indispensability of telemedicine to present-day medical care systems: 92% and only 53% of the Polish and Ukrainian students, respectively, agreed with the above statement. There were no Polish students who thought that telemedicine is not necessary to present-day society, while 16% of the Ukrainian students thought that there

is no need to apply ICT technologies. Only 8% of the Polish students had no opinion on this subject, while there were 31% of Ukrainians who chose the “no opinion” reply.

Conclusions

The Polish and Ukrainian experience in the field of the application of ICT systems in healthcare shows that they are considered to be promising and modern tools of direct communication between the staff and the patient. However, they are not used in a sufficient way by medical specialists, which makes it necessary to change the current approach to teaching them at medical universities.

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Abstract

The article presents issues regarding the current and future application of telemedicine services in Ukraine and Poland that result from the recent implementation of legal regulations on telemedicine in Ukraine. The authors discuss the differences in this field and the progress level in the implementation of distant medical care. The barriers with regard to the identification and authentication of service providers are a serious problem that hinders the use of telemedicine services to their full extent

The article also presents the most important conclusions from the comparative analysis of the Polish and Ukrainian education system of medical specialists with regard to the application of ICT technologies in healthcare.



Key words

telemedicine services, telemedicine, Poland, Ukraine, legal regulations