

COMPARATIVE STUDY BETWEEN THE EVOLUTION OF TELEMEDICINE IN ROMANIA AND DEVELOPMENT TRENDS IN THE EUROPEAN UNION

Adrian POP

Bucharest University of Economic Studies, Romania
pop_aditza@yahoo.com

Abstract

The measures adopted during the COVID-19 pandemic to reduce the health crisis led to the implementation of a new service in current medical practice - telemedicine. In the post-pandemic period, telemedicine continued to be practiced around the world. This is the premise from which this article starts. The proposed goal is to carry out a comparative study between the evolution of telemedicine in Romania and the level of development in the European Union. Achieving the goal required, as a first objective, knowledge of the development of telemedicine in Romania, followed by a comparative analysis with the level of development of telemedicine in the European Union. For the first objective, the method of researching the collectives that have the necessary information for the study was used. A survey was carried out, using as methods for data collection, the method of direct survey research and online research by accessing the websites of institutions responsible for the practice of telemedicine. The comparative study was carried out through a parallel between telemedicine services in the European Union and those in Romania. Through the combined analysis of the results of the two investigations, the opportunities for development and the constraints of the telemedicine sector in Romania were identified.

Keywords: telemedicine, electronic health, mHealth, electronic communication, medical informatics.

DOI: <https://doi.org/10.24818/beman/2023.13.2-03>

1. INTRODUCTION

According to the World Health Organization (WHO), telemedicine is “the provision of health services by health professionals, when distance is a critical factor, and which uses information and communication technologies for the exchange of valid information for the diagnosis, treatment and prevention of diseases and accidents, research and evaluation, and continuing education of medical personnel, with the goal of ensuring the health of individuals and communities” (WHO, 2021).

In the literature, there are several terms and concepts synonymous with the term telemedicine, which are not yet precisely defined. So, electronic health, also known as e-health, define healthcare practices

supported by electronic processes and communication. In Romania, telemedicine is still at an early stage. For the development of these services, the managerial remodeling (Nicolescu and Verboncu, 1999, 221-232) of the health sector and the adoption of strategic investment decisions and organizational restructuring of the medical system are necessary. Such managerial restructuring depends on variables reflecting the demand for telemedicine with different values in the territorial plan. The management of the decision-making authorities, the Ministry of Health in this case, must be based on a thorough analysis of the factors involved, as the effectiveness of the strategy for establishing new structures - new sections, departments specialized in remote medicine - depends on the depth of the investigation.

In this article it was aimed to determine the strengths and weaknesses of online medical assistance in Romania by comparing the current stage of development of telemedicine in Romania with the level reached by the other member states of the European Union, as well as identifying the opportunities for the development of telemedicine services.

2. THE APPEARANCE AND EVOLUTION OF TELEMEDICINE. THE IMPACT OF THE COVID-19 PANDEMIC

The term "telemedicine" appeared in the 1970s, being introduced by the American Thomas Bird with the meaning of "remote treatment" (Khan et al., 2022), term composed of "tele" distance in Greek and "medicus" doctor in Latin.

The concept of remote medical care was recorded for the first time in the medical journal *The Lancet*, founded in England in 1823. An article from 1879 indicates the use of the telephone for medical consultations in order to reduce visits to medical offices, or of doctors at home patients (Rinde and Balteskard, 2002).

The first invention adapted for telemedicine was made at the beginning of the 20th century by the Dutch physician and physiologist Willem Einthoven (*Encyclopaedia Britannica*, 2023), the inventor of the electrocardiograph, an invention for which he received the Nobel Prize for Medicine. He made an electrocardiograph with which he recorded the electrical cardiac signals of patients in a hospital located at a distance of 1.5 km. These experiments were published in 1906, Willem Einthoven being considered the first to achieve a technique similar to those currently used in telemedicine.

The first radio consultations appear after the First World War, in the 1920s, when the Norwegian Navy carries out radio consultations for patients on ships at sea. In 1959, in the United States, the first interactive video consultation known by telemedicine for neurological examinations was performed.

An important role in the development of telemedicine was played, in the following decades, by NASA (the National Aeronautics and Space Administration), through the development of technologies for the medical assistance of astronauts. He provided the first medical aid in an isolated rural area on the Papago Indian Reservation in Arizona. NASA also used satellite transmission to apply remote medical assistance technologies to the disasters caused by the earthquakes in Mexico City (1985) and the one in Armenia (1988).

The COVID-19 pandemic has caused a change in the destinations of telemedicine uses up to that point. The pandemic has boosted the rapid introduction of telemedicine in the healthcare system to limit the risks of coronavirus contamination of medical staff and patients. So, there has been a large-scale conversion to telemedicine consultations instead of direct contacts between patients and medical staff.

At the beginning of the pandemic, telemedicine was more widely used in the US, UK and China, gradually it came to be practiced worldwide. In this way, doctors were able to consult, make recommendations and monitor patients with chronic diseases. They were also able to identify patients who showed symptoms of coronavirus infection. For their part, the patients were able to get in touch with the doctors, present their health problems, providing them, if requested, with photos of various medical documents through means of communication: applications such as Skype, Whatsapp, e-mail (email) and/or telephone.

3. THE STAGE OF TELEMEDICINE DEVELOPMENT IN ROMANIA

The parallel between the similarities and differences of the development of telemedicine in Romania, compared to the evolution in the European Union, has as its first objective, the knowledge of the current situation of telemedicine in the local medical world. This chapter aims to achieve this goal by analyzing the telemedicine services market. The main variables that define the existing or predictable behaviors on the market are demand and supply and primarily the ratio between them (Nicolescu et al., 2003, vol. 2, 119-120).

For the analysis of these aspects, the method of selective research of the communities that have the information necessary for the study was used. A survey was carried out that used as methods for data collection:

- direct research method by telephone and e-mail survey, or by personal interviews;
- online research by accessing the websites of institutions where telemedicine is practiced, or websites specialized in offering online consultations.

The collectives analyzed to obtain the primary data were:

- hospitals and medical clinics in the public and private sector in Bucharest;
- the individual offices of doctors of various specialties who practice telemedicine;

- family doctor;
- the medicine distribution network within the radius of the Municipality of Bucharest;
- private health insurance companies;
- patients.

The offer of remote medical services

On the market of telemedicine services, the offer is provided through the public health system and the private medical system.

In order to describe the offer of telemedicine services (Nicolescu et al., 2003, vol. 2, 123-126), the survey was carried out, in the first phase, on a representative sample of hospitals and medical clinics, through a telephone survey or online research by accessing respective clinic websites. Later, in order to outline this side of the analysis more precisely, the investigation was extended to individual specialist doctors' offices and to family doctors' offices. In these collectives, the collection of information through face-to-face interviews with the representatives of the chosen samples is also used. Direct interviews in the drug distribution network were also used.

From the analysis of the primary data collected, it was found that telemedicine was used on a very small scale before the start of the pandemic, both in public and private clinics.

On the private telemedicine market in Romania, the offer is provided by hospitals and private medical clinics, individual offices of doctors of various specialties whose services also include online consultations. There are also companies specializing in medical advice over the phone, online platforms, mobile app or video call, as well as websites specializing in providing telemedicine services.

The private health system quickly adapted to pandemic conditions by implementing the telemedicine service, especially after the publication of Emergency Ordinance no. 196/2020 for the amendment and completion of Law no. 95/2006 regarding health reform. Through the adopted norm, the possibility of providing medical assistance via telemedicine by public and private health units is outlined. In this way, the legislative bases for favouring investments in telemedicine platforms are created. This confirms the managerial theory (Nicolescu et al., 2003, vol. 2, 21) according to which government policies are combined with the managerial strategies that, at the microeconomic level, firms establish for their own development. The motivation for recognizing the private medical sector as an actor of the telemedicine services scene, lies in the need to respond to patients' requirements regarding the quality, diversity and promptness of the services offered (Nicolescu et al., 2003, vol. 4, 205).

Medical companies with private capital in Romania have made investments in complete digital telemedicine platforms. For example, the Regina Maria company established a virtual clinic in 2020 with 100 doctors conducting online consultations, currently the number of doctors registered on the platform

has reached 500, with skills in 40 medical specialties. The number of online medical consultation appointments increased by 32% in 2022 compared to 2021. Also, the "Dr. Sanador - Online Medical Consultations", with over 150 doctors from dozens of medical specialties. So all large chains of private clinics have implemented telemedicine services through applications on various platforms: Zoom, Microsoft Teams, Blue Jeans, Skype, etc. Among the companies specialized in remote medical advice, we mention the company Telios Care SA. It is the first telemedicine company in Romania, established in 2017. It currently has over 250,000 beneficiaries nationwide, providing medical assistance for 26 medical specialties.

In the hospitals in the public system that were not designated, during the pandemic, as covid support hospitals, special attention was paid to the monitoring of patients with chronic diseases for whom the risk of contamination was even higher. For their monitoring, but also for consultations and recommendations regarding other conditions, telemedicine was used, in some cases platforms dedicated to certain diseases were implemented. An example is the telemedicine platform dedicated to patients with multiple myeloma, used in collaboration by hospitals specialized in the treatment of this disease, four hospitals in Bucharest, and one each in Cluj-Napoca, Târgu Mureş, Timișoara and Iași.

The Administration of Bucharest Hospitals and Medical Services (ASSMB) launched, in March 2020, a free online consultation platform for the 19 hospitals under its administration. The activity of the application was suspended when the cases of coronavirus infections decreased. At the institutional level, the use of telemedicine in public sector hospitals has been abandoned. But on an individual level, about 30% of doctors continue to monitor patients online.

An initiative in the public health system belongs to the Central Military Emergency University Hospital "Dr. Carol Davila", who in partnership with the Ministry of National Defense and the Special Telecommunications Service started the "Defence telemedicine IT system". The project will serve the 14 medical-military units under the Ministry of National Defense. Also within the Central Military Emergency University Hospital "Dr. Carol Davila" has been operating since 2016 Telemedicine, Communications and Information Technology Agency (Central Military Emergency University Hospital „Dr. Carol Davila”, 2018).

The basis of the public health system is family medicine. The investigation carried out in family doctors' offices showed that the recommendations of the National Federation of Family Physicians' Associations (2020) regarding remote consultation during the pandemic were respected. In 70% of practices, these practices continued even after the revocation of social distancing, especially for the continuation of an already established treatment, for prescriptions and compensated prescriptions, and for referrals to other medical specialties. The doctors surveyed stated that it is a way that provides more safety for both patients

and medical staff, also reducing congestion in waiting areas. Medical documents: electronic prescription (prescription), simple prescription, referral/admission ticket, investigation ticket, medical leave certificate, home care recommendation, etc. can be transmitted to the patient through electronic means of communication.

In the drug distribution network, the investigation looked at whether there is technological availability to dispense prescriptions issued by doctors online. It was found that in the main pharmacy networks, the electronic prescription, validated by the EPIS (Electronic Prescription Information System), can be identified in the pharmacy EPIS based on identification elements that can be communicated to the patient by phone: prescription series and number, initial code doctor, practice CUI, prescription issuance date.

An important player in this market are health insurance companies. They have the role of intermediary in the market of telemedicine services between private medical clinics and holders of private health insurance policies. These companies have begun to include phone, video or text consultations in their insurance packages, in addition to office visits. The leaders of the insurance market are launching their own telemedicine platforms, where the company's clients will benefit from consultations provided by doctors through a medical chat service. Insurance companies recommend that companies that conclude health insurance for employees, purchase packages that also contain telemedicine services. The proposal is motivated by the decrease in absenteeism caused by unnecessary trips of employees to medical offices during office hours.

Request for telemedicine services

In the second stage, the investigation focused on researching the demand for telemedicine services (Nicolescu et al., 2003, vol. 2, 120-123), among the population over 15 years of age, of both sexes, coming from the urban or rural environment. The survey used the method of direct research through telephone survey and e-mail, as well as direct personal interviews, as methods for data collection.

The sample interviewed by telephone or e-mail was selected from the database of a private health insurance logistics support company issued by five top private health insurance companies.

The direct personal interviews were carried out, mostly in the medicine distribution network within the radius of the Municipality of Bucharest.

According to the analysis of the centralized primary data, a percentage of 30% of those questioned used telemedicine services. A higher percentage of 39% was registered in the sample interviewed directly, in pharmacies. It can be concluded that the population of Bucharest is more receptive to the use of telemedicine. At the opposite pole is the rural population. Of these, less than 10% used distance medicine. Respondents from large cities, with over 250,000 inhabitants, Cluj-Napoca, Iasi, Constanța, Timișoara, used telemedicine services in proportions between 30-33%. In the other urban areas, the proportion of

respondents who confirmed the use of remote medicine varies between 25-28%. A suggestive image of this reality is shown in Figure 1.

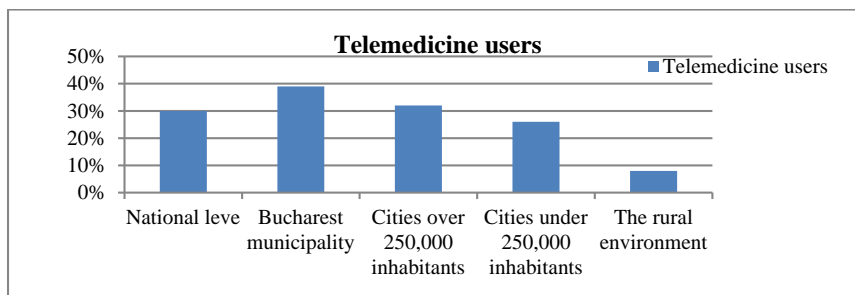


FIGURE 1. TERRITORIAL DISTRIBUTION OF TELEMEDICINE SERVICE USERS IN ROMANIA

Source: The inquiry regarding the request for teledicine services

There are several factors that determine the gaps between big cities and rural areas or small towns. A first explanation is the lack of information among rural and small town residents regarding the advantages of using teledicine. In fact, in many of the vulnerable areas the population does not even benefit from basic medical guidance and counselling, over 500,000 Romanians do not have a family doctor in their place of residence. These areas are also generally disadvantaged from an economic point of view, with residents having limited resources for information and communication technologies.

Another factor that influences the geographical distribution of patients who use teledicine services is the coverage of Romania's territory with public fixed internet networks. The Communications Regulatory Authority (ANCOM) (Vasilache, 2023) communicated, on March 15, 2023, that in Romania there are 1,476 localities where individual end users do not have access to any fixed public electronic communications network. Romania is a world leader in terms of high Internet speed, but the urban-rural gap requires a set of decisions and actions, a strategic management (Nicolescu and Verboncu, 1999, 134-136) materialized in increasing the degree of connectivity of unserved localities with fixed networks. These are disadvantaged areas such as urban or rural fringe neighbourhoods not covered by data services, but where there is latent demand. The set of these strategic objectives is concretized in the National Recovery and Resilience Plan (PNRR) which, according to managerial theory (Nicolescu and Verboncu, 2006, 98-104) contains the essential objectives of the approach, deadlines and funds intended for financing.

The use of teledicine service is also influenced by the age of patients. According to the study carried out, teledicine services were used by two thirds of younger people aged up to 45-50 years. The difference of one third of teledicine services being used by people over 55-60 years of age. Also, less than 20% of the respondents over 60 years of age stated that they used remote medicine, the method of consultation used by them being by telephone. The reason why the elderly use teledicine to such a

COMPARATIVE STUDY BETWEEN THE EVOLUTION OF TELEMEDICINE IN ROMANIA AND DEVELOPMENT
TRENDS IN THE EUROPEAN UNION

small extent is that they either do not have adequate communication devices or do not know how to use them, situations that make it necessary to have relatives with whom to communicate in a consultation online.

A differentiation was also found among the medical specialties used by the respondents through telemedicine. The specialty with the largest weight in the demand for telemedicine services, reflected in Figure 2, is family medicine 48% of the total number of consultations, followed by psychiatry/psychology 27%, dermatology with 23%, pediatrics 21%, gastroenterology and endocrinology over 10%, the other specialties being below 10%.

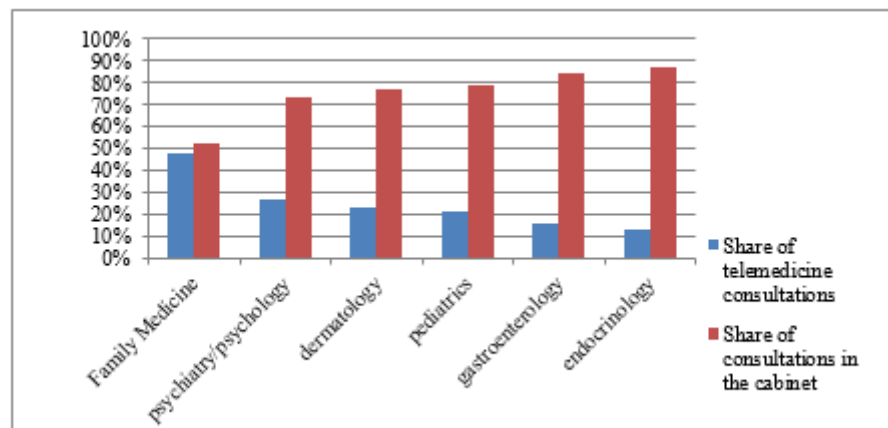


FIGURE 2. SHARE OF THE NUMBER OF CONSULTATIONS CARRIED OUT VIA TELEMEDICINE COMPARED TO THOSE CARRIED OUT IN THE OFFICE

Source: The inquiry regarding the request for telemedicine services

In fact, family medicine is the first specialty that patients turn to when they have a health problem, so this is the explanation of high proportion of requests for telemedicine consultations. Regarding the infrastructure of family medicine offices, it was found that more than 95% have a computer used for writing electronic prescriptions. Also, over 67% of family doctors store patients' medical records in electronic format.

The communication channels preferred by the respondents who resorted to remote consultations are 45% by phone, WhatsApp 12%, video consultations via the Internet 14%, with the same share registering those through the clinics' telemedicine platforms 14%. Video consultations via the Internet and via telemedicine platforms were used in the highest proportion, 82%, by young people up to 45-50 years old. From this category, a higher share is recorded by respondents who have children, compared to people without children. The explanation being that parents have resorted more to accessing video applications and platforms dedicated to telemedicine for the medical examination of minors.

Regarding the level of satisfaction with telemedicine services of the respondents who used these services, it was found that about 33% of them are satisfied with the quality and the way in which online consultations are conducted, stating that they will continue to use these examination techniques medical. Less than 20% of respondents dissatisfied with the quality of these services believe that they will use remote consultations again, giving confidence to the favorable development of this medical service. Two thirds of the respondents who have not used this medical practice until the time of the interview are interested in accessing telemedicine services in the future. So, the degree of interest and acceptance by patients of e-health services is around 60-62% of the interviewed respondents.

4. COMPARISON BETWEEN THE EVOLUTION OF TELEMEDICINE IN ROMANIA AND THE DEVELOPMENT TRENDS IN THE EUROPEAN UNION

The comparative study between the evolution of telemedicine services in Romania and their level of development in the European Union was carried out by:

- the comparison between the objectives of the European Union regarding the development of telemedicine services and those transposed in medical practice in Romania, in order to determine the extent to which they were implemented;
- comparing the indicators characteristic of telemedicine achieved by the medical system in Romania with the indicators achieved in the European Union.

Since 2008, the European Commission has highlighted the advantages and usefulness of telemedicine for patients and health systems, but also for the whole society. So, starting with the third EU multiannual health action program (2014-2020), objectives, projects and actions have been established for the development of the e-health sector. Objectives continued in the current program "EU for health" (EU4Health) for the period 2021-2027, which supports the actions of the European Union in the area of e-health (European Commission, 2019):

- updating the unique integrated health IT system;
- achieving interoperability between health systems at national and European level;
- updating and standardizing nomenclature (classification of disease groups, etc.);
- electronic management of citizens' health;
- increasing the ratio between prophylactic medical actions compared to those of curative medicine;
- expansion and consolidation of medical emergency services;
- implementation of e-health procedures to facilitate preventive medical activities.

These objectives have materialized in Romania through the implementation of IT systems dedicated to the health system that constitute the basis for the development of telemedicine services in accordance with the European Union's policy in this domain (Ministry of Communications and Information Society, 2020):

- Single Integrated System (SUI);
- Classification system by diagnostic groups (Related Diagnostic Groups - GDI);
- Electronic Prescription System (RE);
- Health Insurance Card System (SCAS);
- The electronic management system of patients' files;
- SMURD.

The implementation of these systems brought important managerial changes in the practice of health units, but also the change of operational methodologies that require periods of adaptation for the full adoption of the systems. Any complex managerial approach must be focused on an appropriate methodology, structured in stages and phases whose rigorous compliance is able to ensure quality and functionality of the new system (Nicolescu and Verboncu, 2006, 18-23).

The parallel between the e-health sector in Romania compared to the expansion of telemedicine in the European Union was achieved through the indicators used by Eurostat analyzes to characterize the evolution of this sector, indicators that illustrate the level of advancement of countries regarding the development of telemedicine.

An indicator that can be used in the analysis of the adoption of telemedicine services is the level of use of the Internet (European Commission, 2019). One of the indicators, of this kind, used in Eurostat reports is the proportion of households with Internet access. According to data published by the National Institute of Statistics (2023) in Romania, 82.1% of all households had access to the home internet network in 2022. According to this indicator, in Eurostat reports, Romania ranks below the European average (93%) in the first place 21 between the states of the European Union (Eurostat Statistics Explained, 2022).

The urban-rural difference in terms of internet access characterizes from a geographical point of view the possibility of adopting e-health solutions. In the European Union this gap is four percent, 94% in urban areas and 90% for rural areas. In the same Eurostat report as the previous indicator, Romania is placed at the bottom of the ranking with a gap between urban and rural of 12%, but ahead of Greece and Portugal which have a difference of 14% each.

The data published by Eurostat regarding the use of electronic networks for the transfer of prescriptions to pharmacies in digital format, ranks Romania, with a percentage of over 60% of family doctors who

prescribe electronic recipe, in 9th place among the European Union states. The same report notes, regarding the exchange of data between patients and family doctors, that in Romania only 20% of doctors use the exchange of health data, compared to the European Union average of 43%, ranking 21st among member states. Romania is also above the European average in terms of the degree of interest and acceptance by patients of e-health services. From the survey carried out among patients, a degree of interest of 60% in Romania resulted, compared to the European average of 37%.

The analysis of the comparative indicators, which illustrate the level of advancement of the countries regarding the development of telemedicine, shows that Romania is in most cases in the second half of the ranking. The most difficult situation, 25th place among EU member countries, registering the difference in internet access between urban and rural environments. In this direction, efforts are needed to remedy the situation. The exception is the indicator regarding the prescription of electronic prescriptions, which ranks Romania in 9th place in the ranking of European Union states, the best position occupied by Romania.

After knowing the particularities within the analyzed contexts, a comparative analysis involves highlighting the similarities and differences, through the prism of the achievements recorded by the two contexts (Burduş, 2006, 400-402). At the same time, it is necessary to formulate some conclusions regarding the similarities, differences, cases of universality, but especially the opportunities and constraints on which the development strategies can be based.

5. CONCLUSIONS

The conclusions of the article result from the combined analysis of the results of the two investigations carried out, the study of demand and supply on the telemedicine market in Romania and the comparative study between the telemedicine services in the European Union and those in Romania. By combining the two analyses, the strong and weak points of telemedicine services in Romania were identified, the opportunities and threats or constraints (Nicolescu et al., 2003, vol. 2, 126-127) on the market of these services. In this way, a series of measures necessary for the development of telemedicine services in Romania were highlighted.

Strengths

- Increasing the degree of cooperation and inter-hospital communication, through the use of telemedicine tools, especially in emergency medicine;
- Centralization of health reports at the national level;
- Existence of the classification system in diagnostic groups;
- Providing family doctors with computers and access to the Internet;

- Existence of ultra-fast broadband internet networks.

Weaknesses

- Lack of a centralized register of patients with chronic diseases at the national level.
- Insufficient use of health IT systems.
- The lack of coherent data collection and analysis activities in the health IT systems.
- Reduced level of interoperability of health platforms.
- Insufficient IT support and communication devices suitable for telemedicine for patients.
- Absence of availability of medical personnel with IT skills.
- Absence of Internet access in 1,476 localities where individual end-users do not have access to any fixed public broadband communications network.
- Major inequalities in the Romanian health sector, mainly as a result of inefficient use of resources and poor management.

Opportunities

- Continuous development of IT infrastructure to support telemedicine through information and communication technology.
- Starting with European funds some regional (rural) e-Health projects, at national and European level.
- Standardization of support activities for medical documents according to EU directives, to support the interoperability of medical systems.
- Possibility of integration and access to European e-health networks within the EU.
- The possibility of using the large volume of existing data in health IT systems, which can be analyzed and used within the medical system.

Threats

- Underfunding of the health system.
- The mobility of the labor force from the health field to other states, due to the attractive salaries and superior conditions offered.
- The aging of the population implies an increase in care costs.

Based on the results of this analysis, measures were identified to remedy some of the weak points of telemedicine services:

- Increasing the support for the population through promotion policies, training and affordable costs for communication devices suitable for telemedicine;
- Continuous training of medical and administrative staff in the use of telemedicine technologies;
- Strengthening trust and acceptance of telemedicine services;

- Promoting the exchange of medical information in the relationship between doctors by implementing easy IT technologies;
- Promoting the exchange of medical data in the relationship between doctors and patients;
- Increasing the degree of connectivity of localities without fixed internet networks.

Also, the development of information technologies and the European Union's e-health policies provide suitable development opportunities for the Romanian health system, as well as possibilities to mitigate the constraints faced by telemedicine services in Romania:

- Increasing the level of interoperability of IT applications, by using common standards to expand the pan-European communication of systems;
- The use of special technologies, software and hardware with the ability to analyze large data sets, to analyze data from the health IT system in order to facilitate the use of the information contained in the system.

The implementation of these recommendations requires the financing of investments in the public and private sectors. Although the development and implementation of e-health solutions in national health systems is the responsibility of the Member States, the EU has committed to providing support through funding. European structural and investment funds are still available for Romania, despite the reduced degree of absorption. It is expected that these funds will participate in the future financing of the development of telemedicine in Romania.

REFERENCES

- Burduş, E. (2006). International comparative management. Bucharest: Economic Publishing House
- Center for Health Policy and Services (2022). Guide to telemedicine in primary care. Retrieved from: <https://www.unicef.org/romania/media/10056/file/Ghid%20de%20telemecicin%C4%83%20%C3%AEn%20asisten%C8%9Ba%20medical%C4%83%20primar%C4%83.pdf>
- Central Military Emergency University Hospital „Dr. Carol Davila” (2018). Telemedicine, the medicine of the future. Retrieved from: <https://www.scumc.ro/telemecicina-medicina-viitorului/>
- Encyclopedia Britannica (2023). Willem Einthoven Dutch physiologist. Retrieved from: <https://www.britannica.com/biography/Willem-Einthoven>
- European Commission (2018). Benchmarking Deployment of eHealth among General Practitioners (2018). Retrieved from: <https://op.europa.eu/en/publication-detail/-/publication/d1286ce7-5c05-11e9-9c52-01aa75ed71a1/language-en>
- European Commission (2019). Market study on telemedicine. Retrieved from: https://health.ec.europa.eu/system/files/2019-08/2018_provision_marketstudy_telemedicine_en_0.pdf
- European Commission (2019). Transforming health and care in the Digital Single Market Retrieved from: https://www.europarl.europa.eu/doceo/document/TA-9-2019-0105_RO.html

- European Commission (2020). EU4Health programme 2021-2027 – a vision for a healthier European Union. Retrieved from: https://health.ec.europa.eu/funding/eu4health-programme-2021-2027-vision-healthier-european-union_ro
- European Commission (2022). 22nd eHealth Network meeting Summary Report. Retrieved from: https://health.ec.europa.eu/events/22nd-meeting-ehealth-network-2022-11-07_en
- European Commission (2022). eHealth Network GUIDELINE on the electronic exchange of health data under Cross-Border Directive 2011/24/EU. Retrieved from: https://health.ec.europa.eu/latest-updates/general-guidelines-guidelines-electronic-exchange-health-data-under-cross-border-directive-201124eu-2022-06-10_en
- Eurostat Statistics Explained (2022). Digital economy and society statistics - households and individuals Retrieved from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Digital_economy_and_society_statistics_-_households_and_individuals#Purpose_of_the_use_of_internet
- Government of Romania (2021). Romania's recovery and resilience plan. Retrieved from: <https://mfe.gov.ro/wp-content/uploads/2021/09/28ff3a6c360882865c596111d8aad533.pdf>
- Government of Romania (2022). Decision no. 1,133 of September 14, 2022 regarding the approval of the Methodological Norms for the implementation of the provisions of the Government Emergency Ordinance no. 196/2020 for the amendment and completion of Law no. 95/2006 on health reform. Published in the Official Monitor no. 909 of September 15, 2022. Retrieved from: <http://legislatie.just.ro/Public/DetaliuDocument/259367>
- Khan, S., Llinas, E.J., Danoff, S.K., Llinas, R.H., Marsh, E.B. (2022). The telemedicine experience: using principles of clinical excellence to identify disparities and optimize care. *Medicine@* Published by Wolters Kluwer Health, Inc. Retrieved from: https://journals.lww.com/md-journal/fulltext/2022/03110/the_telemedicine_experience_using_principles_of.25.aspx
- Ministry of Communications and Information Society (2020). National Strategy Regarding the Digital Agenda for Romania 2020. Retrieved from: <https://www.comunicatii.gov.ro/agenda-digitala-pentru-romania-2020/>
- National Federation of Family Physicians Patronages (2020). How the remote consultation with the family doctor will be done. Specialists' recommendations. Retrieved from: <https://legestart.ro/cum-se-va-face-consultatia-la-distanta-cu-medicul-de-familie-recomandarile-specialistilor/>
- National Institute of Statistics (2023). Statistical Yearbook of Romania. Retrieved from: https://insse.ro/cms/sites/default/files/field/publicatii/asr_serii_de_timp_2022r_0.pdf
- Nicolescu, O. et al. (2003). Modern approaches in the management and economy of the organization, volume 2: Management by fields of activity. Bucharest: Economic Publishing House
- Nicolescu, O. et al. (2003). Modern approaches in the management and economy of the organization, volume 4: Economic efficiency and managerial performance of the organization. Bucharest: Economic Publishing House
- Nicolescu, O., Verboncu, I. (2006). Managerial methodologies. Bucharest: Publisher Economic Tribune
- Nicolescu, O., Verboncu, I. (1999). Management. Bucharest: Economic Publishing House
- Nicolescu, O., Verboncu, I. (2006). Fundamentals of organization management. Bucharest: Publisher Economic Tribune
- Rinde, E., Balteskard, L. (2002). Is there a future for telemedicine? *The Lancet*, June 8. Retrieved from: <https://www.thelancet.com/journals/lancet/article/PIIS0140673602088451/fulltext>.

POP, A.

COMPARATIVE STUDY BETWEEN THE EVOLUTION OF TELEMEDICINE IN ROMANIA AND DEVELOPMENT
TRENDS IN THE EUROPEAN UNION

Vasilache, A. (2023). Almost 1,500 localities in Romania without fixed high-speed internet. HotNews.ro. Retrieved from: <https://economie.hotnews.ro/stiri-telecom-26139598-aproape-1-500-localitati-din-romania-fara-internet-fix-de-mare-viteza>.

World Health Organization (2021). Global Digital Health Strategy 2020-2025. Retrieved from: www.who.int/docs/default-source/documents/g4dhdaa2a9f352b0445bafbc79ca799dce4d.pdf