

A Panoramic View of Telehealth Activities in Peru

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Abstract

Telehealth actions in Peru have been developed for several years. Objective: to construct a panoramic view of the telehealth development process in Peru. Method: an analysis was made of legislation related specifically to telehealth and scientific articles published since 2002, the date of creation of the national telehealth commission in Peru. The telehealth documents available on the project websites and the Ministry of Health were also analyzed. The material was classified into three main topics: history of structuring of telehealth activities in the country, main experiences and current initiatives. Results: As early as 2005, a national telehealth plan was approved in Peru, and several institutional documents focusing on telehealth are produced. In 2016, the Framework Law on Telehealth is approved, which provides concrete guidelines regarding the structuring and payment of telehealth actions by health service providers in the country. The national health plans already incorporate the possibility of using telehealth resources, with telehealth actions having a relevant role to address the various challenges presented by the Peruvian health system. However, despite extensive legislation, Peru still does not have a national structured telehealth project. Conclusion: there is still a long way to go for structuring the actions of telehealth in Peru.

Keywords: Peru, Telemedicine, Telehealth

Resumen

Una visión panorámica de las actividades de telesalud en el Perú

Las acciones de telesalud en el Perú se vienen desarrollando desde hace varios años. Objetivo: construir una visión panorámica del proceso de desarrollo de la telesalud en el Perú. Método: Se efectuó el análisis de la legislación específica a la telesalud y los artículos científicos publicados desde el año 2002, fecha de creación de la comisión nacional de telesalud en Perú. Se analizaron también los documentos relativos a la telesalud disponibles en los sitios web de los proyectos y el Ministerio de Salud. El material se clasificó en tres grandes tópicos: historial de estructuración de las actividades de telesalud en el país, principales experiencias e iniciativas actuales. Resultados: en 2005, es aprobado en el Perú un Plan Nacional de telesalud y a posteriori se producen varios documentos institucionales centrados en el tema. En 2016, se aprueba la Ley Marco de Telesalud, con directrices concretas relativas a la estructuración y el pago de las acciones de telesalud por parte de los proveedores de servicios sanitarios en el país. Los planes nacionales sanitarios ya incorporan la posibilidad del uso de recursos en telesalud y las acciones en el área juegan un papel relevante de cara a enfrentar los diferentes retos presentados por el sistema sanitario peruano. Sin embargo, y a pesar de la abundante legislación, Perú no tiene un proyecto nacional de telesalud estructurado. Conclusión: todavía hay un largo camino por recorrer para la estructuración de las actuaciones de telesalud en el Perú.

Palabras clave: Perú, Telemedicina, Telesalud

Resumo

Uma visão panorâmica das atividades de telessaúde no Peru

As ações de telessaúde no Peru são desenvolvidas há vários anos. Objetivo: construir uma visão panorâmica do processo de desenvolvimento de telessaúde no Peru. Método: foi realizada uma análise da legislação relativa especificamente a telessaúde e de artigos científicos publicados a partir do ano de 2002, data da criação da Comissão Nacional de Telessaúde do Peru. Foram analisados também os documentos relativos à telessaúde disponíveis no endereço eletrônico dos projetos e do Ministério de Saúde. O material foi classificado em três grandes tópicos: história de estruturação das atividades de telessaúde no país, principais experiências e iniciativas atuais. Resultados: já em 2005 um Plano nacional de telessaúde é aprovado no Peru e a seguir, diversos documentos institucionais focando a telessaúde são produzidos. Em 2016, é aprovada a Lei marco de telessaúde, que oferece diretrizes concretas relativas à estruturação e pagamentos de ações de telessaúde pelos provedores de serviços de saúde no país. Os planos nacionais de saúde já incorporam a possibilidade de utilização de recursos de telessaúde, com as ações de telessaúde possuindo um papel relevante para o enfrentamentos dos diversos desafios apresentados pelo sistema de saúde peruano. No entanto, apesar de uma farta legislação, o Peru ainda não possui um projeto nacional de telessaúde estruturado. Conclusão: ainda há um longo caminho a ser percorrido para a estruturação das ações de telessaúde no Peru.

Palavras-Chave: Peru, Telemedicina, Telessaúde

INTRODUCTION

Telemedicine is defined as the provision of distance medicine services. Information and communication technologies are usually used for implementation. The word comes from the Greek *τελε* (tele) meaning 'distance' and medicine (from the Latin *medicus*, derived from *mederi* 'caring', 'heal'). The telemedicine includes procedures that require the support of simple technology, such as the telephone discussion of a case by two health professionals, to the use of advanced technology in communications and information technology for consultation, diagnosis and remote surgery in real time¹.

In Peru, the rugged geography makes transportation and communications difficult, limiting access to health services. If we examine the geographical accessibility, it is a problem for the population living in the rural area that has low income, since there are deep inequalities in the distribution of medical resources, both within regions and within each region.

The telemedicine can be a great ally of the country to provide health care. Among the processes that may include the telemedicine we have:

- Research, monitoring and management between the specialist and the patient;
- Use of electronic communication to provide support in the health field when distance separates participants;
- Digital archiving services for radiological exams, ultrasounds and others.

Peru has a National Telehealth Plan, approved by Supreme Decree 028-2005-MTC, and a Technical Health Standard in Telehealth, approved by Ministerial Resolution 365-2008 / MINSAs². In 2016, Law No. 30421, the Framework Law on Telehealth, was approved.

The first telehealth projects began to be implemented in 2002. However, despite the many legal advances, and due to the complexity of the structure of the health system in Peru, so far it has not been implemented a national telehealth project that covers all regions of the country, with the same approach and uniformity of actions and structure. The purpose of this article is to build a panoramic view of the telehealth development process in Peru.

METHOD

Several steps were taken to elaborate this article. Initially, the documents referring to telehealth on legislation, projects and scientific articles were accessed, as follows:

1. Analysis of legislation related specifically to telehealth from 2002, date of creation of the national telehealth commission in Peru.

2. Analysis of published scientific articles on telehealth in Peru from 2002.

3. Analysis of technical reports and presentations in congresses in the area of telehealth, enabling access to the content of the various ongoing telehealth projects in the country.

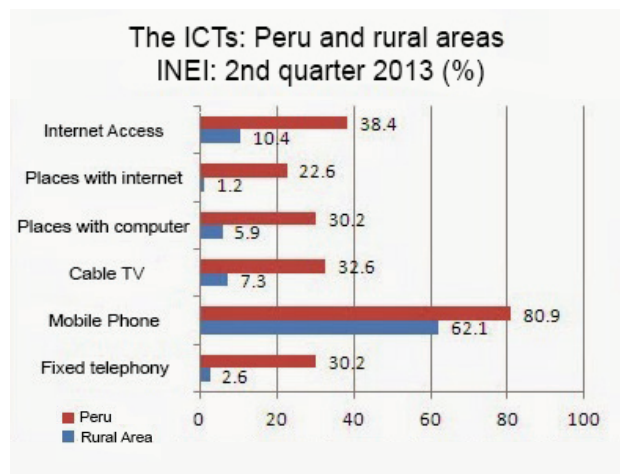
4. Analysis of telehealth documents available on project websites and the Ministry of Health.

Subsequently, the material for the analysis was classified into three main topics: history of structuring of telehealth activities in the country, main experiences and current initiatives. It was decided to present the main aspects of telehealth legislation in the period under review, as well as to structure the analysis taking into account published scientific articles and the structuring of telehealth projects. In this way, it was possible to restore the process of development of telehealth in Peru.

RESULTS

In order to contextualize the difficulties and potentials of telehealth in Peru, it is observed that the development of the process of incorporation of ICT is slow, with only 38.4% of the population in the year 2013 that has access to the Internet, although the 80.9% of households already have mobile telephony (Graph I).

Graph I: Incorporation of ICTs in Peru, 2013



Source: National Institute of Statistics and Informatics - National Household Survey - 2013

With regard to telehealth, the results will be presented in three large blocks: history of structuring the telehealth activities in the country, main experiences and current initiatives.

1. History of structuring telehealth activities in Peru

In 2003, the National Telehealth Commission was established in Peru by Supreme Resolution No. 009-2003-MTC3. This National Commission is oriented to integrate the initiatives, works and projects that have been developed in relation to the Telehealth in order to optimize resources, to avoid double efforts and expenses, and to develop a joint work, framed in a National Plan of Telehealth.

The text states that the National Telehealth Commission is in charge of preparing and proposing the necessary actions for the development of Telehealth in Peru. This commission elaborates the National Plan of Telehealth of Peru and in 2005 is already approved, consubstanciated in the Supreme Decree No. 028-2005-MTC¹. The plan points to the role of telehealth:

"[...] the incorporation of Telehealth as a Health Technology in support of the Coordinated and Decentralized National Health System, will serve as a strategic tool to facilitate change, which uses ICT to meet the population's health needs."

It also emphasizes that it serves the population and the people¹:

"At the service of the population, bringing quality health services closer to the citizens of rural areas, dispersed populations of the sierra and the Amazon; regardless of where they are and reducing barriers to access services, promoting the equity and universality of health care."

"At the service of health personnel, integrating the staff of the different levels of care, through a communication network in the health system, allowing them to share information and favoring the continuity of care among the levels of care. It will also facilitate the access of the health personnel to the training and continuous updating at a distance."

It emphasizes that the national telehealth plan is part of a State policy and constitutes the starting point for the development of telehealth in the country, in which various sectors of society will be involved, integrating efforts so that in the future, achieve a better level of health of the population.

The Plan proposes as one of the main strategies the creation of the Integrated System of Telehealth, in order to provide integral health care, based on the principles of universal coverage, equity in access, efficacy in health production and efficiency in the use of resources.

The National Telehealth Plan 2005 emphasizes the strategic role of telehealth, situating it in the context of the

development of the health system and highlighting its main potentialities to contribute to this development¹:

"The telehealth is not only the implantation of technology, it is an entire process, it is more than a healthcare tool that allows the provision of health services at a distance. It is also a strategic organizational change tool for the National Coordinated and Decentralized Health System (SNCDs); because by encouraging the integration of information among the subsystems that compose it, it facilitates the adequate coordination between them and between the levels of attention and organization of each one at the national level."

Jorge Cordero Valera, president of the National Telehealth Commission and coordinator of the elaboration of the plan in that period, lists the main aspects that guided its elaboration¹.

a) The evaluation of the situational state was made, through an analysis taking into account three variables: poverty level, access to health services, access to ICTs. The departments with greater gaps in the possibility of access to both a health facility and ICT are numerous. This information is fundamental to guide the investment in Telehealth projects.

b) The need to think about an Integrated Telehealth System (SIT), with the purpose of improving and expanding the provision of health services, benefiting the population in general, especially the rural and dispersed one. It has been considered convenient to name it as an Integrated Telehealth System because it will be integrated into the SNCDs as a support technology and because it will also seek the integration of all the subsystems that make it up and the health care units at different levels of care, through a National Telehealth Network.

c) The existence of five components that are interrelated among them and are critical factors to the development of the national telehealth plan. These are:

- Legal Component
- Organizational Component
- Process Component
- Technological Component
- Financial Component

d) Three axes of telehealth development have been structured in the country, which are the lines of application of Information and Communication Technologies in the field of health, according to the type of service provided:

- Provision of health services

- Information, education and training for the population and health personnel
- Management of health services

According to Valera, the National Telehealth Plan initiates the development of Telehealth in the country in a planned way and in line with the priority needs of the area¹:

"In this sense, based on a diagnosis focused on both the health situation and the field of ICTs, specific objectives, strategies and actions are set out to set the guidelines for future Telehealth Projects. Finally, critical success factors must be considered; organizational changes, cultural and technological impact that will lead to the implementation of Telehealth."

Next, the plan defines that its mission is to contribute to the decentralization and integration of the country's health system and the universality of health services with quality, efficiency and equity for the priority benefit of the excluded and dispersed populations through the incorporation of information and communication technologies.

The Plan also highlights the guiding principles that underpin the Telehealth in the country¹:

- Universality in the access to health - Telehealth seeks to make health services more flexible by taking these services to excluded and dispersed populations.
- Equity - Reduce, through the telehealth, the existing gap in access to health services among excluded or dispersed populations compared to urban, so that health care is provided with equal quality and similar options.
- Efficiency - In health care, medical knowledge, training and information and, most importantly, it is an instrument that can, in many cases, represent the only means by which health care can be provided in rural areas and preferably of a social interest.
- Quality - Promote integral health care, based on the user's satisfaction, improving diagnostic accuracy and therapeutic attitudes decisions (possibility of consulting treatments with specialists), by providing distance and continuous training to health personnel, which improves their performance, facilitating continuity in the patients's at different levels of care.
- Decentralization - Progress towards the decentralization of the health system, using the Telehealth as a strategic tool that facilitates change, which, using ICTs, optimizes the flow of health service delivery processes.

- Social development - It promotes the development of society, allowing the population a greater access to health information, knowledge of their duties and rights in health, thus promoting the empowerment of people as the main subjects of their own health, his family and his community and creating spaces for new practices of citizen participation.

After analyzing the situation of morbidity and mortality in the country and the priorities of intervention of the health system, the plan makes a diagnosis of the incorporation of ICTs in the country and after the telehealth, systematizing some aspects.

As for the strengths that the telehealth presented at that time, the text highlights: experience of human resources in the applications of Telehealth and the execution of Telehealth Projects; experience in technological solutions, adapted to our reality for its use in Telehealth networks; existence of Health Infrastructure at the national level; existence of the program that provides qualified human resources in rural and marginal urban areas of the country; existence in the SNCDS of flexible offer in the health services; existence of the virtual library in Health of Peru; existence of telecommunication networks at the national level, nodes that could serve as primary skeleton; general policy guidelines to promote the massification of Internet access in Peru; existence of laws; existence of the Multi-sectoral Commission for the Development of the Information Society and existence of the National Telehealth Commission.

Regarding the weaknesses to implement telehealth actions, the following aspects stand out: geographical and social gap that requires comprehensive health care due to the existence of a broad geographic space and inequity in the provision of health services; concentration of the provision of health services in urban areas; high operating costs in the provision of health services; lack of infrastructure and ICT equipment for health, and the existing one with a high degree of obsolescence and attrition; high costs of services in Peru in relation to the purchasing power of the population; lack of standards in the information management of SNCDS members, which will generate increased costs, less information flow, etc.; concentration of telecommunication services in urban areas; deficient knowledge of ICT in the population and health personnel; inadequate funding for telehealth projects; insufficient knowledge of ICT; high rotation of properly trained health personnel, hindering the continuity and application of health policy guidelines; insufficient ethical-legal and operational norms in the exercise of telehealth; cultural barriers and training (age group, digital divide, slang) on the use of ICT in medicine; lack of implementation of a national telehealth program and lack of telehealth projects.

Finally, the plan details its objectives. Its general objective is to develop, orient and disseminate an Integrated Telehealth System, with the purpose of improving and expanding the provision of health services, benefiting the general population with an emphasis on excluded and dispersed areas.

The specific objectives are: to promote the implementation of the national network of Telehealth and its subsequent development, integrating to health establishments; implement comprehensive health care programs with emphasis for rural populations and dispersed ones through the National Telehealth Network; implement distance information, education and communication programs for health professionals and the population through the National Telehealth Network; and strengthen and improve the processes of management of the national health system, improving its performance through the use of the National Telehealth Network.

The plan elaborates different strategies for the implementation of actions of Telehealth Process, as well as proposes guidelines for the elaboration of a monitoring system of the telehealth activities in the country.

In 2008, the technical norm for telehealth was elaborated⁴. The Technical Standard in Telehealth was developed to contribute to the decentralization and integration of the health system and the universalization of health services with quality, efficiency and equity through the incorporation of Telehealth.

The general objective of the standard is to regulate, through technical and administrative provisions, the applications of the Telehealth in the management and actions of Information, Education and Communication (IEC) in the health services, as well as in the health services under the modality of the telemedicine. It has the following specific objectives⁴:

- Establish the quality and opportunity criteria for the telehealth applications in the provision of services under the modality of telemedicine;
- Define applications in the management of health services;
- Define the applications in the actions of Information, Education and Communication in the health services.

With regard to the scope of application of the Technical Standard of Health, it comprises all health establishments and medical services of public and private support. On the other hand, the standard provides a set of operational definitions about the terms used in telehealth and then provides specific characteristics that health services must possess to offer telehealth actions from the point of view of technological capacity, the provision of health services under the modality of telemedicine (involving telemedicine applications,

areas of action, human resources, clinical history and care records, priority procedures, risk management) and remote management of health services.

The development of the national plan and the norms of the telehealth area are intended to contribute to the development process of telehealth activities in the country.

2. Main experiences of Telehealth in Peru

The main experiences of telehealth in Peru have been addressed in various documents and articles. Initially, in 2005, the National Telehealth Plan document lists and describes the main experiences that exist up to that moment in the country¹.

- Hispanic-American Link Project Applied to Health - EHAS Peru

It is intended to influence the health conditions of the inhabitants of rural areas of Peru through the working conditions of health personnel.

The specific objectives are the improvement of the access to information of these personnel, and it gives telecommunication infrastructure of the establishments in which they work.

The work has two parts: the first is the generation of value-added services based on systematic accumulation, selection and processing of information, to be offered to the beneficiaries in an efficient and timely manner, in order to satisfy their demand; the second part is the development of technical solutions to the problem of data transmission under the conditions that the rural geography imposes in Peru and within the constraints of the level of rural development.

- The Scientific Information Network (RIC) and Cardiovascular Network of INCOR Telemedicine

The EsSalud Scientific Information Network (RIC) is a set of thirty six Information Centers (computerized Libraries) interconnected through Information and Communication Technologies (ICT), located in the main health centers of EsSalud in each one of the departments of Peru.

Its mission is to offer up-to-date biomedical information to health professionals at the national level, for its ongoing training (continuous education), updating and improving the knowledge and techniques of its respective specialties, attending their needs in order to improve or expand medical services and / or health care.

Its structure is based on a network architecture of information sources, with decentralized development and operation. They maintain distributed bases of scientific and technical knowledge in health, organized and stored in elec-

tronic format, which is accessible through the Internet, in a compatible way with other national and international products and services.

The Telemedicine Cardiological Network of the National Heart Institute (INCOR), through the ICTs, provides the different health centers of EsSalud in the country, medical technical assistance, remote control and diagnostic help; with the possibility of making queries to its virtual file.

Its main services are:

- Real-time or deferred remote consultations and consultations that allow greater access to specialized services in the country.

- Consultations of second opinion by specialists in order to obtain specialized diagnostic criteria that allow better quality of patient care.

- Sending of digitized images of still and moving picture files.

- Programming of higher resolution procedures such as cardiac catheterization, interventional surgery or even cardiac surgery with exams performed previously in the place of origin.

- Access to the INCOR virtual file: clinical history, exams, procedures, and even cardiac and vascular intervention and surgery performed at INCOR, greatly expanding the information contained in the local and national counter-reference sheet.

- Alert: a technological platform of communication and electronic data reporting for public health in Peru;
- Infosalud, created on July 25, 2001, under the name of FONOSALUD.

The following year, on February 8, 2002, it changed its name to INFOSALUD. INFOSALUD is a free information service and telephone counseling of the Ministry of Health, made up of a team of professionals (doctors, obstetricians, psychologists and social communicators), who provide comprehensive health counseling, institutional information, citizen oversight and support in emergencies and disasters. INFOSALUD's mission is to provide a rapid and free access to information and telephone counseling to meet the communication needs in areas of integral health, public monitoring and participation, emergencies and disasters and institutional information, actively and timely contributing to strengthen the guidelines and goals of the health sector.

- Alo-EsSalud. Project whose objective is to develop an effective policy of preventive health services, by absorbing specialized telephone consultations and issuing technical-scientific documents.

Between 2009 and 2012 the Ministry of Health of Peru describes the following projects⁵:

2012	Telemedicine in Candarave, Tacna Telecommunications Investment Fund Ministry of Health	To promote the social and economic development of the beneficiary population, through the use of Information and Communication Technologies.
2012	Care for your Mobile Health Ministry of Health	Cancer prevention through the promotion of healthy behaviors
2012	Live Birth Registration System Online Ministry of Health	Have a Birth Information System that helps to streamline the process of identification of newborns at the national level
2011	Mobile Emergency Care System - SAMU Ministry of Health	To fully manage emergency care and pre-hospital emergencies, for timely resolution, primarily in urban areas with greater exposure to risk events and in rural areas
2009	National Network of Virtual Technical Assistance in Neonatal Critical Care National Perinatal Maternal Institute	Contribute to the reduction of neonatal morbidity and mortality in the country, improving the resolving capacity of neonatal units.
2009	Tele electrocardiography Ministry of Health	Ensure the continuity of health care and contribute to solving the health problems of the Tumbesina population

Source: National Institute of Statistics and Informatics - National Household Survey - 2013

In 2015, Altamirano⁶ says that if we do a quick description of the most significant projects developed with the collaboration of MINSA, starting with the most recent, no more than six or seven projects can stand out. The author highlights the following projects as significant: Project "Information and Communication Technologies for the integral development of Candarave Communities" and "Care for your Mobile Health" Program, financed by the MINSA; Live Birth Registration System Online, Mobile Emergency Care System - SAMU; National Network of Virtual Technical Assistance in Neonatal Critical Care; Tele-electrocardiography service at the Regional Health Directorate in Tumbes and

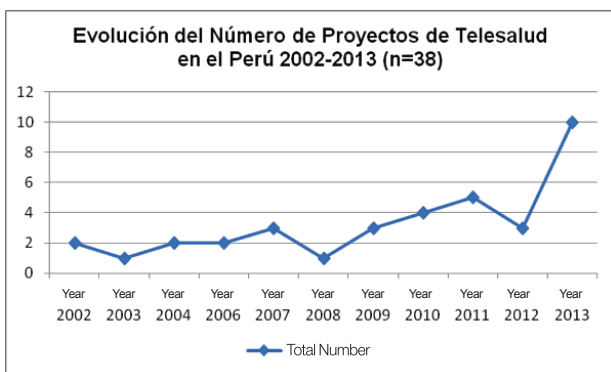
EsSALUD, which has articulated a National Telemedicine Center (CENATE).

The author recalls that in 2013, co-financed by MINSa and the Telecommunications Investment Fund (FITEL) of the Ministry of Transport and Communications, a Telediagnostic and Training System was implemented, which has enabled specialized medical assistance from the Víctor Hospital Ramos Guardia, in Huaraz, to areas far from the Region of Ancash, in disciplines with special need of attention, such as gynecological. The system allows intranet / internet access, incorporates an education and training module, allows the real-time exam with monitors and screens that simulate the patient-medical face-to-face relationship, with a streaming TV infrastructure and high definition video streaming service and medical image quality, as well as various digitally connected medical devices.

More recently, Gozzer Infante⁷, in 2015, under the auspices of the Ministry of Health, develops a systematization of telehealth experiences in Peru, and concludes that there were 57 telehealth initiatives, and managed to detail 38 experiences, of which 66 % are still in progress. The author systematizes and describes in a concise manner his characteristics, classifying the initiatives into four general groups: telemanagement; telediagnosis; telehealth in APS and rural area and telemedicine area. The projects focus on the area of telemedicine.

The author also points out that, from 2013, there is a significant increase in telehealth projects in the country, reversing a very low trend of project growth over time.

Graph II: Evolution of the number of telehealth projects in Peru 2002-2013

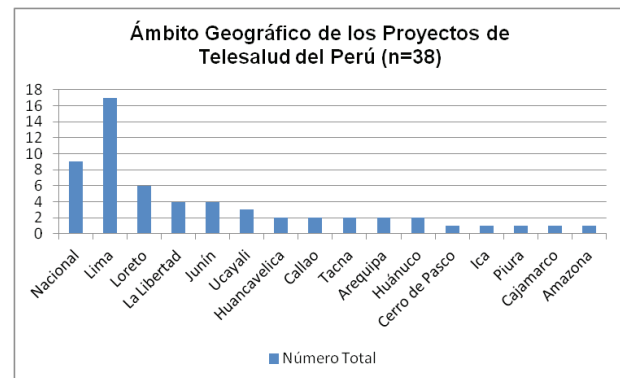


Source: PARSALUD II / MINSa. "Systematization of Pilot Experiences of Telehealth in Peru". Feb. 2014

Regarding the scope of the projects, it also states that 8 projects have national coverage, while the others are in different regions of the country. Gozzer Infante⁷ identifies

that the DISAMAR Alert project is the most comprehensive in the country and has been underway for twelve years.

Graph III: Geographic Scope of the Telehealth Projects in Peru (n=38)



Source: PARSALUD II / MINSa. "Systematization of Pilot Experiences of Telehealth in Peru". Feb. 2014

This diagnosis will make it possible to reconfigure existing telehealth initiatives.

3. Current initiatives for the development of telehealth in Peru

In general, the maturation of an area occurs when, in addition to established training processes and a wide presence in public policies - legal and legal framework - there are national and private academic institutions and civil society organizations such as the Alexander von Humboldt Institute of Tropical Medicine of the Peruvian University Cayetano Heredia that are pioneers in Telehealth with more than 45 years. The IMT AvH is now considered internationally as a center of excellence for infectious and tropical diseases because of the high academic quality and clinical skills of the multidisciplinary team working on it.

With more than 25 years, since the first course in medical informatics was made, then distance education courses in the Andean region and the Caribbean, publications, books, software creation for rapid diagnosis of tuberculosis using artificial intelligence, teleconsultations, telemedicine, teledermatology among others. Currently, due to the country's situation in disaster areas, the teletrainings for the health personnel at the national level have been started from the General Direction of Telehealth of the Ministry of Health (MINSa), the Cayetano Heredia Hospital, ESSALUD, Maternal Perinatal Hospital, Medical College and the Institute of Tropical Medicine Alexander von Humboldt of the Peruvian University Cayetano Heredia⁸.

In Peru, in 2013, the Peruvian Telehealth and Telemedicine Association⁹ is formed, presided over by Gregorio Sancho Pérez. It is an autonomous, non-profit entity that maintains the ties of identity with the Ibero-American Association of Telehealth and Telemedicine, in order to promote and contribute to the development of telehealth and telemedicine in Peru, for the improvement of its members and, through this, to promote the improvement of the health and life of the Peruvian community.

Its main objectives are: to promote the development and application of new information and communication technology tools in the field of health, scientific research and administration; strengthen, support, promote and disseminate the contents of telemedicine and telehealth activities; to promote cooperation and exchange of actions and products generated in the field of telemedicine and telehealth in both the public and private spheres at national and international levels; create and maintain academic ties; interact with academic scientific entities; promote, organize, sponsor events and activities related to telehealth and telemedicine and to collaborate with the official Peruvian organizations that work in this area.

In 2016, again, the telehealth activities are reaffirmed in the context of the development of health policies and on April 2 of that year, the Telesalud Framework Law⁵ was enacted. The law establishes that the principles underlying telehealth are: universality, equity, efficiency, quality of service, decentralization and social development. These principles have been reaffirmed since the development of the national telehealth plan in 2005.

The articulation of health policies with the development of actions in the framework of telehealth continues to be reaffirmed after defining telehealth as a strategy to provide health services, in order to improve its efficiency and quality and increase its coverage through the use of information and communication technologies (ICT) in the national health system.

The law establishes that the health service providers must progressively incorporate the provision of telehealth services into their portfolio of services, guaranteeing their sustainability. Therefore, the law also deals with the process of financing telehealth actions. Both public and private networks define what telehealth actions can be performed and how they will function⁵.

Likewise, it assigns to the Ministry of Health the role of coordinator of the process and continuous is the National Telehealth Commission responsible for the process of development, development and monitoring of the implemen-

tation of telehealth activities in the country. Therefore, it details the attributions of the National Telehealth Commission. The telehealth framework law also deepens the normative aspects so that institutions, both public and private, can provide telehealth services⁵.

Also in 2015, the creation of the Prestational Code 90710, called "Telehealth Care", to be provided in the institutions providing Health Services of Level I, II and III. Through JEFATURAL RESOLUTION No. 161-2015 / SIS, these institutions are effectively authorized to provide telehealth services. This regulation regulates in article 1, the benefits that can be provided with telehealth systems; establishes the procedures for action; determines the need to make the Contracts and Conventions that are relevant between the Providing Entities and the Comprehensive Health Insurance (SIS); and empowers its Department of Management of Irrigation and Performance Assessment to expand by means of document the performance parameters to others not contemplated in these regulations.

Currently, from the organizational point of view, the area of telehealth is institutionalized in the organization chart of the Ministry¹¹. In the context of the four major directories of senior management in the Ministry of Health, the area of telehealth is linked to one of these high directions: the deputy ministerial office of benefits and health insurance. Note the continuation to this general direction with its different directions.

Structure of the Ministry of Health of Peru with the presence of Telehealth

General Direction - viceministerial office of benefits and health insurance
Address of Individual Health Interventions.
Address of Quality in Health.
Address of Donation and Transplantations of Organs, Tissues and Cells.
Address of Telehealth.

Source: Ministry of Health of Peru

Regarding the specific activities in the current period, the Ministry of Health continues to develop fragmented projects, but currently works for the implementation of a national telehealth project trying to focus on assistance to the birth of children. Among the 13,160 medical institutions throughout the country, 802 provide this service. Among these, 477 are out of ADSL and 3G coverage. Therefore, priority is being given to the implementation of this network, in accordance with what is envisaged in the framework law of telehealth¹².

From the point of view of connectivity, Fitel operates a major project in the process of establishing a fiber optic backbone network, which connects 22 capitals and 180 provinces, which will allow the structuring of networks in health units. There is also a project focused on the Amazon region aimed at improving the conditions of connectivity: Loreto-San Martín integration project, which would benefit 24 health centers¹². The Broadband Installation project for the integral connectivity and social development of the regions of Ayacucho, Apurímac, Huancavelica and Lambayeque. The Access Network will integrate and provide broadband telecommunication services to public entities (Educational Centers, Health Establishments and Commis-saries) of 304 localities in the Region.

At present, the Ministry of Health plays a very important role in the beginning of the Teletrainings by the situation of disasters that we are living, the priority areas to train the health professionals are: infectious diseases, mental health, chronic diseases among others at the national level.

Several authors detect weaknesses in the development process of telehealth activities in Peru: a geographic and social gap that requires comprehensive health care due to the existence of a broad geographic space and inequity in the provision of health services; concentration of telecommunication services in urban areas; deficient knowledge of ICT in the population and health personnel, insufficient funding to implement telehealth projects; insufficient dissemination of current experiences in Telehealth and existence of Tele-education platforms; insufficient development of ICT; inadequate computer training courses for health personnel; cultural barriers and training on the use of ICT in medicine; lack of effective implementation of a national telehealth program and potential increase in the tax burden of telecommunications services.

Regarding the recommendations and opportunities for the development of telehealth in Peru, the following systematized aspects should be highlighted⁸:

- Take a more active role in improving the quality of health information;
- The health institutions have to be computerized; facilitate the access of all citizens, to train citizens in the use of ICT;
- Promote programs with content for health care;
- Support the initiatives for a greater equity in access to telehealth programs. All of this will result in greater access to knowledge and research.

Gozzer⁷, in a systematized study on telehealth projects in Peru, identifies the need for telehealth actions to move to

a different level: the need for collaborative work, an institutional effort and funds to move from innovative interventions to the local level to interventions at the national level with a systemic approach that enhances the already developed and promotes new uses of the Telehealth to give a greater impact to health policies and strategies.

When systematizing his proposals for the development of telehealth in Peru, Gozzer⁷ points out that:

- it is necessary that the health authority assumes the leadership both intra and inter sectorally, defining mechanisms to order the growth of this tool for the development of health interventions. In this way, the efficiency of investments is enhanced with an adequate cost-effectiveness balance.
- there is an urgent need to review the national Telehealth standards with the accumulated national experience and the technological capacity available the present. In particular, it is necessary to renew periodically the certifications and mandatory standards that must have interventions to use information and communication technologies for health.
- Another document that needs to be updated is the National Telehealth Plan, which should include the definition of intervention priorities that will promote the development of Telehealth.
- From the point of view of technological infrastructure, there is still a need to increase the bandwidth and access coverage, particularly to populations in the Amazonian and Andean regions.
- Finally, it is observed that few actors know what others are doing. In this regard, the promotion of information exchange networks and the use of different mechanisms such as forums, exchange of experiences, symposia and periodicals are recommended.

On the other hand, Altamirano⁶ affirms that there were regulations that did not focus precisely on the aspects that would allow Peru to make a big leap, but the latest regulations cover an important gap for the development of Peruvian telemedicine, as it was the need to enable the financing of the necessary investments by means of payment for the health services provided by telehealth and not only by means of pilot projects and specific subsidies. Nevertheless, he asserts that this is not enough, because that gap is not the only one. Therefore, this recent norm can and should constitute a significant change in the situation of telemedicine in Peru but only if, and only if, it is accompanied by a genuine telehealth development policy, which also addresses other pending subjects.

Altamirano systematizes the challenges and opportunities for the development of telehealth in Peru, placing five aspects that need to be faced⁶:

- the dispersion and downgrading of specific Telehealth regulations in Peru. In this regard, the author affirms that the MINSA has a new challenge with the approval of the Telehealth Project and should design the guidelines and strategies that crystallize into a new Telehealth Plan that will allow the System to be extended to the whole country, allowing that inclusion in health reaches all Peruvians. All of the legislation that precedes and is currently in force is mainly oriented towards the application of information technology to existing hospital and medical management systems, and it is very good that it is so, but in most cases it is not the updating a clearly obsolete National Plan or providing adequate regulatory support for the development of a system that offers telehealth services in Peru in an efficient and sustainable manner.

- The adequate delimitation of the scope of the concept of telehealth. Legal and ethical responsibility. In this article, the author states that it is clearly seen in the processors of the National Plan that it is willing to “reorient” initiatives towards the application of ICTs to improve administrative and organizational management in the health service. This distances itself from the genuine concept of telemedicine, associated with the medical act, to distance medical care.

- The Medical Act and the Telemedicine concept. Concept and practical consequences.

- The ethical and deontological risks of an extended telemedicine concept. The author states that the exercise of telemedicine presents its own peculiarities that must lead to the reconsideration of the current codes of ethics and the development of specific regulations to satisfy these new demands. The National Plan, in this regard, is aware of this need and proposes a series of criteria that can be considered valid, but insufficient.

In systematizing the necessary actions for the development of telehealth in Peru, Altamirano⁶ proposes a consolidated text that compiles all the regulations that regulate some aspect that should be taken into account for the development of a Telehealth Project in Peru. The regulations that regulate Telehealth in Peru are clearly insufficient, it is out of date and it directs resources to projects that are far from the practice of the distance medical act, which is the main advantage offered by telemedicine to serve in Peru to large sectors of the population that do not have access to health services.

In addition, it also points out that the absence of specific legal instruments that support the practice of telemedicine and its reorientation towards the distance medical act can be a drag that slows down or delay the expansion of this practice in our country, with consequent damages to the patients who could benefit from it, for health systems and for private companies with the intention of investing in this field⁶.

Curioso² affirms that despite the limits, the telehealth in Peru is becoming a reality, as in other countries in the region and the world, favoring access to health services at all levels of care, providing technological benefits, allowing a coordinated and immediate response of care, establishing a rapid and accurate diagnosis in case of an emergency.

DISCUSSION

The process of development of telehealth actions in Peru is underway, with a set of rules and actions, although fragmented, that are certainly updated frequently to try to articulate with the process of development and standardization of the complex Peruvian health system .

Correa¹³ notes that the norms referred to telehealth and ICTs establish coincident principles such as universal access. This coincidence makes possible an important point in the development of telehealth, since it allows establishing strategies whose priorities and actions will be joint, optimizing the work for the development of Telehealth.

According to Curioso², the National Telehealth Plan developed by the National Telehealth Commission opened a door to the development of Telehealth in Peru, which aims to bring more people to efficient services in health care, to Medical knowledge, training and information and, most importantly, it is an instrument that can in many cases be the only means by which health care can be provided in rural areas and preferably in the social interests.

It can be observed that the latest regulations advance in relation to the initial documents, due to they manage to offer concrete guidelines for the process of structuring the telehealth actions in the country. These regulations involve definitions regarding the types of services that can be offered, remuneration and structuring of activities. Altamirano⁶ notes this progress, but asserts that the achievements are still insufficient.

Over time, we also see a set of telehealth projects with different approaches and experiments that are developed in Peru in a fragmented way. These are various initiatives by public bodies that have invested in the field of telehealth.

However, the projects are not continuous nor do they cover the whole country. Altamirano⁶ states that this process has led to numerous pilot projects that consume many resources without significant and sustainable results.

The result of this process is the existence in the country of an important work experience in the field of telehealth, which generates the conditions for the existence of projects of greater scope. In recent years, there has been an expansion of telehealth projects in both the public and private sectors⁷. Likewise, there is also an effort to prioritize the development of the health system, as evidenced by the promulgation of the Framework Law on Telehealth.

Several authors consider that the current situation advances towards the structuring of a telehealth project in Peru that is strongly articulated with policies to strengthen the health system, which contributes to improving access and quality, particularly of the population of remote regions^{2,7,8}.

Curioso² states that telehealth provides greater accessibility to health care personnel, especially in rural areas, isolated areas and with limited resolution capacity through the connection with health establishments. Through the telehealth, the interaction between health personnel and the user transcends geographical and temporal boundaries by avoiding unnecessary travel, shortened waiting times for care and allows diagnosis and support to remote treatment from specialized health establishments, covering the gap created by the lack of qualified human resources and necessary physical resources.

Murrugarra¹⁴ states that his development will depend on the efforts of all the actors, from the end user and the community, to health professionals, the telecommunication companies and governing institutions, respectively, which will benefit from this technological potential at low cost.

CONCLUSION

The telemedicine services in Peru already have a wide development trajectory, with several experiences in course quite articulated with the development of the national health policies. Since 2003 there is a national telehealth commission that promulgated a series of norms that contribute to the development of telehealth in the country. It is verified that, in recent years, the directives derived from these norms allow an advance in the structuring of telehealth actions in the country. However, despite its growing development, there is still no structured project of national scope. One of the fundamental pillars has been prioritized has to

do with the modernization of the infrastructure and interconnection. This will allow the telehealth to work at all levels of the country and communicate to the health staff, among other activities, like a teleconsultation, telesupervision and teletraining of the staff will also be possible.

REFERENCIAS

1. Peru. Comisión Nacional de Telesanidad. Decreto Supremo N° 028-2005-MTC. Plan Nacional de Telesalud. 2004. 170p. Disponible en: <http://www.telesalud.minsa.gob.pe/?pg=2>
2. Curioso WH. La Telesalud y las nuevas fronteras de la informática biomédica en el Perú [editorial]. *Rev Peru Med Exp Salud Publica*. 2015;32(2):217-20
3. Peru. Ministerio de Salud. Resolución Ministerial 009-2003-MTC Creación de la Comisión Nacional de Telesanidad. *Diario Oficial El Peruano*. 23 Abr. 2003. p.243219-20. Disponible en: <http://www.telesalud.minsa.gob.pe/?pg=2>
4. Peru, Ministerio de Salud. Resolución Ministerial 365-2008/MINSA Aprueban Norma Técnica de Salud en Telesalud. 26 Mayo 2008. 11p. Disponible en: <http://www.telesalud.minsa.gob.pe/?pg=2>
5. Peru. Presidente del Congreso de la República. Ley Marco de Telesalud No30421. *Diario Oficial El Peruano*. p. 582202-03. Disponible en: <http://www.elperuano.com.pe/NormasElperuano/2016/04/02/1363168-1.html>
6. Altamirano CHB. La telesalud en Peru. *Diagnostico y propuestas de Mejora. Rev Gob Gest Púb*. 2015 ene./jun.; 2(1). Disponible en: <http://www.revistagobiernoydegestionpublica.com/index.php/REVIGGP/article/view/10/18>
7. Gozzer Infante E. Una visión panorámica de las experiencias de Telesalud en Perú. *Rev Peru Med Exp Salud Publica*. 2015 abr./jun.; 32(2):385-90
8. Murrugarra L. Proyecto Nacional de Telesalud en el Perú. 2012. Curso de formación en telesalud AL [Internet]. [Acceso efectuado el 31/10/2016] Disponible en: <http://www.upch.edu.pe/vrinve/investigacion/telesalud>
9. Asociación Peruana de Telesalud y Telemedicina [Internet]. Disponible en: <http://peru.teleiberoamerica.com/>
10. Lima (Perú). Resolución Jefatural N° 161-2015/SIS. Creación del Código Prestacional 907 denominado "Atención por Telesalud" [Internet]. *Diario Oficial Del Bicentenario*. 31 Julio 2015. Disponible em: <http://busquedas.elperuano.com.pe/normaslegales/crean-el-codigo-prestacional-907-denominado-atencion-por-te-resolucion-jefatural-no-161-2015sis-1269383-1/>

11. Perú. Ministerio de Salud. Disponible en: <http://www.minsa.gob.pe/>
12. Mendonza J P. Innovación y Tecnologías en Salud II: Hacia el Bicentenario en Perú. FEPAS 2014 [Internet]. [Acceso efectuado el 30/10/2016] Disponible en: <http://www.fepas.org.pe/htm/VideosFEPAS2014.html?s=portella+mendonza#>.
13. Correa V. Proyecto Nacional de Telesalud en el Perú. 2012. Curso de formación en telesalud AL [Internet]. [Acceso efectuado el 30/10/2016]. Disponible en: http://150.164.90.7/file.php/34/PDF_Aulas/Aula_Peru.pdf
14. Murrugarra et. al. Perú y América Latina en la Era Digital, Transformando la Sociedad. Lima: Universidad Peruana Cayetano Heredia; 2007.