

Colombia strengthens the practice of telehealth and telemedicine

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Abstract

Introduction: This documentary research seeks to analyze and document the advances and gaps of Telehealth-Telemedicine, from the point of view of the implementation of current regulations and the documents of advance studies of telemedicine in Colombia. **Method:** document the current state of the Implementation of Telehealth-Telemedicine in Colombia and determine the Gaps and barriers that prevent the implementation and maintenance of Telehealth-Telemedicine initiatives, based on the framework established by PAHO / WHO. **Results and recommendations:** The panorama of health care and telemedicine in Colombia is not very different from that of most Latin American countries and includes problems of coverage, accessibility and quality, for which efficient solutions are not yet perceived. To achieve success and precision among many actions, formulate training, education and training strategies in telehealth / telemedicine and formulate guidelines for the incorporation of telemedicine within the service delivery network. **Keywords:** Telemedicine; Telehealth, Information and Communication Technologies.

Resumen

Colombia fortalece la práctica de la telesalud y telemedicina.

Introducción: Esta investigación documental busca analizar y documentar los avances y brechas de la Telesalud-Telemedicina, desde el punto de vista de la implementación de la normatividad vigente y los documentos de estudios de avance de la telemedicina en Colombia. **Metodo:** documentar el estado actual de la implementación de la Telesalud- Telemedicina en Colombia y determinar las Brechas y las barreras que impiden la implementación y mantenimiento de las iniciativas de Telesalud- Telemedicina, basado en el marco establecido por la OPS/OMS. **Resultados y recomendaciones:** El panorama de atención en salud y telemedicina en Colombia no es muy diferente al de la mayoría de países latino americanos y incluye problemas de cobertura, accesibilidad y calidad, para lo cual no se perciben aún soluciones eficientes. Para lograr éxito es preciso entre muchas acciones, formular estrategias de formación, capacitación y entrenamiento en telesalud/ telemedicina y formular lineamientos para la incorporación de la telemedicina dentro de la red de prestación de servicios.

Palabras-clave: Telemedicina; Telesalud; Tecnologías de Información y Comunicación

Resumo

Colombia fortalece a prática de telessaúde e telemedicina.

Introdução: Esta pesquisa documental busca analisar e documentar os avanços e lacunas da Telessaúde-Telemedicina, do ponto de vista da implementação das regulamentações atuais e dos documentos de estudos avançados de telemedicina na Colômbia. **implementação da Telessaúde e Telemedicina na Colômbia e determinar as lacunas e barreiras que impedem a implementação e manutenção de iniciativas de Telessaúde e Telemedicina, com base no marco estabelecido pela OPAS / OMS. Resultados e recomendações:** O panorama dos cuidados de saúde e telemedicina na Colômbia não é muito diferente do da maioria dos países latino-americanos e inclui problemas de cobertura, acessibilidade e qualidade, para os quais ainda não são percebidas soluções eficientes. Para obter sucesso e precisão em muitas ações, formule estratégias de treinamento, educação e treinamento em telessaúde / telemedicina e formule diretrizes para a incorporação da telemedicina na rede de prestação de serviços.

Palavras-chave: Telemedicina; Telessaúde, Tecnologias da Informação e Comunicação

INTRODUCTION

The incorporation of information and communication technologies (ICTs) in health systems is considered a fundamental element in facing the challenges posed by the socio-economic transformations initiated at the end of the 20th century¹.

Considering the panorama of health care in Colombia, which is not very different from that of most Latin American countries, the difficulties of health care, including problems of coverage, accessibility and quality, for which efficient solutions are not yet perceived, are compounded by the perception of society, which severely judges inefficiency, high costs, delays and barriers to access to the system. Thus, the government of Colombia has proposed various solutions to reduce these inequities, and has enacted Law 1438 of 2011² with emphasis on Primary Health Care (PHC), Resolution 1441 of 2016, which establishes the grouping of institutions under the figure of Integrated Health Services Delivery Networks, and sets out guidelines and comprehensive routes for health care, within a comprehensive health care policy,

The provision of health services at a distance using the ICTs, conform the modality of provision of services of telemedicine by means of this modality, new processes are incorporated in the attention, integrating the technology available to the exercise of the attention of the disease in any of its moments (promotion, prevention, treatment, recovery, rehabilitation and palliation), to improve the access to the services and the resolution in the attention and the indicators of attention, satisfaction and efficiency. In this context, improving access to timely and quality health care contributes to increased efficiency by reducing the costs of care through the reduction of referrals to the higher complexity, which is generally located in urban centers far from people's rooms, as well as reducing out-of-pocket expenses. On the other hand, this modality allows co-management and decongestion of high complexity care, increasing the resolution capacity of the service network in low complexity.

Taking into account the previous legislation where public policy has so far legislated, the intention is to identify the barriers and visualize the gaps, for which there is no progress in the implementation of the current regulations of telehealth-telemedicine in the colombian territory.

This documentary research is justified by the need to analyze and document the advances and gaps in Telehealth-Telemedicine from the point of view of the implementation of current regulations and the documents of studies on the progress of telemedicine in Colombia.

In Colombia, as in other countries, the tele-health-telemedicine legislation is incipient because it is recent in comparison with the legislation of other countries more advanced in the field. Telemedicine is considered to be one of the greatest innovations in health services, not only from the technological point of view but also from the cultural and

social points of view, since it favors access to health care services, improves the quality of care and organizational efficiency.

The commitment of telemedicine to providing solutions to the challenges that socio-economic changes pose to health systems in the 21st century (demand for health care, ageing population, increased mobility of citizens, need to manage large amounts of information, global competitiveness and provision of better health care) is well known, and all this in an environment of budgetary constraints and expenditure containment.

However, the standardization of telemedicine presents major difficulties for its full implementation and application.

Despite the strong political will to incorporate Information and Communication Technologies (ICTs) in health care, and yet the increase in activity related to telemedicine, it is clear that it still has little more than a testimonial presence in clinical and healthcare activity, as referred to by PAHO/WHO Washington, D.C. 2016.³

Although an increasing number of pilot projects and feasibility studies are being carried out, few telemedicine applications have been consolidated in clinical practice and incorporated into healthcare processes, often remaining behind once the initial phase has passed.⁴

The purpose of this document review is to know the current status of the implementation of telehealth-telemedicine in Colombia and to determine the gaps, to subsequently monitor and evaluate the progress of the indicators after the implementation of the National Development Plan 2018-2022, "Pact for Colombia, Pact for Equity", which establishes the Modern Social Policy "Health for All with quality and efficiency; and one of the strategies is to encourage tools to modernize the management of service provision through the interoperation of information systems and improve interconnectivity in the territories in coordination with the guidelines of the Ministry of ICT.⁵

The objectives are: (i) To document the current status of the implementation of Tele-health and Telemedicine in Colombia and to determine the gaps, in order to subsequently monitor and evaluate the progress of the indicators after the implementation of the National Development Plan 2018-2022, "Pact for Colombia, Pact for Equity"; (ii) to conduct a documentary review on telehealth-telemedicine in Colombia, looking for progress and gaps to achieve implementation; (iii) identify the barriers that prevent the implementation and maintenance of the Telehealth-Telemedicine initiatives for the implementation of the current Telehealth-Telemedicine regulations in the colombian territory, (iv) to learn about the evolution and evaluate the current situation of telemedicine in Colombia in order to document the current state and in the medium term see the evolution taking into account the new initiatives embodied in the Development Plan from the year 2020; (v) conduct a review of the progress made in implementing tele-health and telemedicine in Colombia in the context of the framework for the implementation of

a telemedicine service, PAHO/WHO Regional Office for the Americas, 2016.⁵

METHOD

The documentary research was carried out with the help of electronic search engines, specialized databases and web conferences. The information was collected from the current normative bases of e-health in Colombia, sCielo and Google Academic, using as keywords “telemedicine”, “tele-salud-telemedicina”. Additionally, the websites of “Colombian associations”, “Consultor Salud”, “Así vamos en salud” and the “Ministry of Health and Social Protection in Colombia” were consulted.

The criteria taken into account for the selection of documents on telehealth-telemedicine in Colombia were those related to progress and gaps in achieving implementation and the methodologies established by PAHO/WHO Telehealth-Telemedicine and its implementation framework.⁶

RESULTS AND DISCUSSION

The evidence that has appeared in the international literature on the difficulties of introducing technologies such as telemedicine (and eHealth in general) into health institutions points to changes in work processes and organizational transformations as sources of internal resistance¹. Economic factors have also been described in the international literature as a barrier, where studies in the United States point to the absence of reimbursement models for the activity as a fundamental factor.^{7,8}

According to the chosen methodology, the Implementation Framework for a Telemedicine Service, PAHO/WHO Regional Office for the Americas, was selected. Where it presents the barriers to the implementation of telemedicine ,adapted from the qualitative study on the incorporation of telemedicine in health care organizations.⁹

Table 1: Barriers to the implementation of telemedicine

Technological area	<ul style="list-style-type: none"> - The lack of technological infrastructure and skills. - The deficient coverage in certain areas of the territory. - Diversity of existing information systems, with a large number of applications custom-designed internal systems without providing for the possibility of interconnection. - Complexity in the use of the implemented solutions. - The issue of security, confidentiality and data protection.
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Organizational Scope	<ul style="list-style-type: none"> - The (re)design of the care model and the corresponding need for training about the new model of care. - The lack of strategic alignment between the different participants in the projects of telemedicine. - The (re)definition of some existing roles and the emergence of new profiles professionals who, along with the redistribution of responsibilities, pose conflicts of professional recognition and insecurity in the assumption of tasks in the highly hierarchical environment that characterizes health organizations. - The permanent change in which projects are forced to advance, consequence of the speed of technological change and of an environment such as healthcare, in a permanent process of improvement.
Human scope	<ul style="list-style-type: none"> - The human factor, generically defined as “resistance to change”. - The lack of emotional bond and belonging to the project. - The degree of individual competence in computer environments and/or the skills required to develop safely. - Previous opinions on telemedicine. - Skepticism towards certain types of “pilot” tests - considered unnecessary due to the very nature of the technology to be tested. - The workload involved in setting up this type of program in the current environment. - The resistance to change of routines in which professionals feel safe and comfortable because of a new and unknown one that implies a certain degree of initial uncertainty. - The different interests, concerns and priorities of the professionals who have to implement it compared to those of the promoters.

Economic area	<ul style="list-style-type: none"> - Implementation costs. - The initial funding and sustainability of the project. -The fact that telemedicine is not present in the Administration's portfolio of services and therefore is not there is a defined and explicit economic framework to which all organizations are eligible, is considered by most as the most relevant barrier for their normalization. This barrier is linked to the lack of evidence scientific on the clinical and economic benefits.
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The manner in which the analysis was conducted was in accordance with the Telemedicine Service Implementation Model⁵ presented by PAHO/WHO: "Competitiveness Hat - Telemedicine Hat".

When the process of introducing telemedicine in the health sector is poorly planned, designed and conducted, results can be obtained that differ from those initially intended. Thus, one of the main causes of failure, recognized in many telemedicine projects, is that their development had focused more on the technology itself (telemedicine as an end in itself) than on its role as a "means" to satisfy a specific need of the population or the health system.

This layer would therefore include indicators for measuring (monitoring, evaluation and optimization) the practice carried out.

Secondly, we find the development phase of the telemedicine service, in which the 'hat' of telemedicine considers the internal explanatory factors of health organizations that explain the use of telemedicine. Telemedicine is a complex technology that is proposed as an alternative to the current provision of health services. It can affect all stages of health care and modify the role of professionals, the way in which doctors interact and the way in which doctors and patients interact. It also has ethical and legal implications (responsibility for decisions by professionals, data privacy, information security, and informed consent, to name a few). In particular, this layer would include the financial, human resource and organizational factors, technology and infrastructure, and the legal and institutional aspects that define the implementation of telemedicine within the organization.

For example, the financial costs of the practice; the people and equipment employed; the technological elements and limitations, especially usability and safety; and the legal and institutional drivers and barriers to implementation of the practice, such as medical and clinical effectiveness.

In order to carry out the analysis of the above-mentioned aspects, we will have to inform ourselves about a series of measures, such as the ethical and legal aspects. These two factors are important because of the principles they repre-

sent and, moreover, are different between countries.

The application of telemedicine could change not only the organization of Health Care, but as a consequence of these organizational changes, redefine its planning and improve its financing, orienting the planning towards its integration and reducing the costs for the adaptation of the structures that support the care and the professionals to the functions that they really should carry out in the current Information Society, where people are the greatest asset, but also the generators of most of the costs, as is normal in a service company. These changes, which should occur with the appropriate introduction and generalization of ICTs, should be at the macro level -State Government-, at the Meso level -which would affect health care structures such as hospitals and health centers-, and at the micro level -with specific applications in clinical and socio-health care units.

Once we have dealt with the three basic layers of the process of implementing a telemedicine service, we come to the service development phase, which considers the internal explanatory factors of health organizations, which explain the use of telemedicine, which are the guide to development according to 4 main dimensions:

1. the legal, regulatory and safety aspects
2. technological and infrastructure aspects
3. the human resources aspects and
4. the financing aspects of the service.

RESULTS AND CONCLUSIONS

Telemedicine has dramatically reduced the need to move or relocate patients. Experiences that are avoided from 47% in dermatology and 80% in emergencies in the same proportion in American and European countries. In the most extraordinary case, the physical presence in the pediatric tele-cardiology experience is reduced to 1% .¹⁰

The definitive incorporation of telemedicine in a mixed public health system based on the agreement of services requires the definition of a business model that allows health organizations to obtain reimbursement for the activity carried out. In a system with a multitude of agents, the alignment of particular implementation strategies with the more global strategies defined by political bodies, as well as the correct management of organizational change, also takes on special importance. In general, on the road to the standardization of telemedicine, it seems necessary to move from a model focused on the production of evaluative evidence to one that takes into account the transformational aspects of the technologies and the organizational and health management processes associated with them, accepting that any process of incorporation of this type of technology will in itself be highly specific and contextual, closely related to the local characteristics themselves, which must be taken into account and managed appropriately.⁹

Infrastructure

Only 54% of providers refer to Internet connectivity, with costs exceeding 5 million pesos per year, of which only 48% have cable and fiber optic connections and 72% have bandwidths of more than one megabyte. More than 50% of the equipment used by providers and EAPBs for hosting computer tools and telemedicine activities has been in use for more than four years and 5% of the providers' computer equipment is used in specific telemedicine activities. With regard to the use of biomedical equipment for TM, the highest availability is given by electrocardiographs followed by vital signs monitors and the oximeter, which makes it clear that the most widely used equipment is for support of diagnostics of less complexity.

Computer security policies: 31.7% of those surveyed confirmed that they had one, and by the nature of the provider, 64% of the public and 49% of the private sector deny computer security policies. Only 33.64% of providers reported having information security protocols or data security management protocols, with a better performance (60.63%) in providers with the Telemedicine modality, a data that draws attention, especially when the data security protocol is a criterion for enabling the modality⁴

Electronic Health Record and Information Management

With regard to the collection, storage and transmission of individual patient information (HC), 46.12% of providers report that everything is done on paper and 35.29% are doing it with some degree of automation; 23.06% of providers without Telemedicine have some degree of automation while 60% of those with Telemedicine report the existence of some degree of automation.

Among the actors surveyed, the predominant use of paper is observed for the collection, storage and transmission of individual patient information, which is managed by 240 providers; of these, 232 providers use paper in a percentage greater than 75%. This result makes it clear that many physical transactions persist today and that there is an urgent need to automate the management of patient information among providers, especially when there is an obligation to organize services in networks.

The use of individual patient information to consolidate national databases such as SIVIGILA, RIPS, RUAF, is carried out by one out of every two providers and two out of every three of the EAPBs and DTSSs, where one would expect it to be 100% for all.

Telemedicine Services

Providers report a start of TM services since 2003; it is evident that 72% of those who respond to the survey started between 2011 and 2014, 28.41% started in 2012 and 25% in 2013, with a stability of the service (uninterrupted

service) from 2012, when the vast majority of the established services are accumulated.

The providers that have consolidated this modality report an average of three years of service delivery; some of the providers record that the time to achieve service stability is increasing, which could be influenced by difficulties in payment and the relationship between providers and payers, situations evidenced by the perceived barriers and by the perception that the modality is not in the context of the service delivery network.

Training in Telehealth is referred to by 6.15% of providers, with more practice by public than private providers; the personnel who receive the most training are health care personnel (3 out of every 4) with an average intensity of 1.5 hours. These trainings are not carried out in the STDs, nor for the professionals of the compulsory social service (SSO). The main reason reported by providers is the "non-authorization" of services.

Human Talent

The vast majority of the personnel involved in telemedicine at the providers are technology support personnel, with a ratio of 2 technology support persons per care professional, 84.28% of the personnel are involved in pay per event/activity. In the STDs, the linkage reported as the majority corresponds to the order of service provision.

Tele-Education And Knowledge Management

Training in Telehealth is not a homogeneous activity at the national level, 7.89% of providers say that they have carried out training in telehealth in the last year, an activity that is reported to have greater participation in private reference centers.

Communication and Social Marketing

The dissemination and popularization of the telemedicine modality in the general population in STDs is not carried out, and in providers and payers, less than 1 in 10 disseminate the modality of care.

Financing And Sustainability

For the strengthening of Tele-health - Telemedicine, the public and private actors surveyed have appropriated resources, and a greater execution of resources is observed in the private sector; the public sector reports a lower execution of resources, which could be affecting the sustainability and continuity of the modality of telemedicine in that sector.

The degree of satisfaction with the modality on the part of telemedicine users is below 50 per cent, which is less than that measured in satisfaction surveys with care.

FINAL CONSIDERATIONS AND RECOMMENDATIONS

With the Directorate of Development of Human Talent in Health, based on the findings formulate strategies for training, education and training in telehealth / telemedicine of staff needed for their development, with the participation of the education sector and stakeholders to promote the appropriation of ICT in care.

Carry out technical assistance activities for the personnel involved in the development of the telemedicine modality in the Territorial Health Entities (DTS), Benefit Plan Management Entities (EAPB) and Health Service Provider Institutions (IPS), focused on changing attitudes towards the use of ICTs, closing gaps associated with the lack of knowledge of their use and raising awareness for the automation of processes in the provision of health services.

To formulate guidelines for the incorporation of Telemedicine TM within the service provision network, considering the characteristics of the relationships between providers and EAPBs, the different forms of contracting, the financial viability, the logistical capacity of the regions, aspects of insurance coverage and those related to the care model.

Formulate strategies for the dissemination and popularization of the care modality that involves all stakeholders in the development of telehealth/telemedicine so that patients and citizens recognize this care modality and perceive it as one that favors the opportunity and resolution of health problems, especially in those communities that have supply limitations, access limitations, or both.

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