

Digital Health Literacy: A Future Healthy Choice

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ABSTRACT

The pandemic has shown the importance of health organizations adapting rapidly to teleconsultation services, investing in e-health with quality criteria and monitoring outcomes. Through a literature review and gathering research already carried out on e-health communication and with practical examples, it is verified that, if the requirements of proximity, quality, and interpersonal relationship are met, better health results can be obtained. When communication is established in health via mobile phone, with image, sound, voice, text, it is thus possible to work the memory and health instructions of patients and obtain better health outcomes. These strategies must be personalized and adapted to the patient's age and context.

KEYWORDS

E-Health, Health Communication, Health Literacy, Teleconsultation

INTRODUCTION

When reflecting on the main barriers in relation to digital health systems, there is a set of concerns, already evaluated, such as: lack of knowledge of applications; lack of training of professionals, unknown effective cost, lack of legal policies/ regulations, underdeveloped infrastructure, lack of research and leadership and investments, in addition to human barriers (beliefs, constraints).

The e-health process covers a national, European and international strategic vision.

In June 2020, the European Commission pointed out 3 priorities for the Digital Transformation of Health and Care in the Digital Single Market:

1. **Data security:** Citizens' secure access to their health data, also across borders - allowing citizens to access their health data across the European Union;

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2. **Shared personalized health:** By sharing a European infrastructure that allows researchers and professionals to accumulate resources (data, knowledge, compute processing and storage capacities);
3. **Citizen empowerment with digital tools for user feedback and people-centric care:** Using digital tools to empower people to take care of their health, stimulate prevention and enable feedback and interaction between users and healthcare providers.

The question that the European Union poses is how to ensure citizens' access to their health data in Europe safely. The European Commission asks: What does Europe have to do to make this happen? And the answers relate to the following three points, associated with the rights, electronic records and the necessary investments to be made.

1. Review patients' rights in cross-border healthcare (Article 14) to define the role of the *e-health network* in the governance of service infrastructure (EHDSI) and the rules on *cross-border* data transfers should be clarified;
2. Draw up a recommendation with technical specifications on how citizens' electronic health records can be exchanged across the EU;
3. Create investments to extend the programme to include the infrastructure network (EHDSI) with funding for the introduction of the exchange of electronic national health records between participating Member States.

The National Academies (2020) states that so-called digital literacy or and-health literacy has to do with the ability to search, find, understand and evaluate health information from electronic sources and then apply that knowledge to address a health problem.

Part 1 of the concept of National Academies (2020), it's easy: *the ability to search, find health information from electronic sources (mobile + internet)*.

Part 2 of the concept National Academies (2020), it's difficult: *understanding and evaluating health information from electronic sources*.

Literacy and health issues in their dimensions need to be considered with even greater care when we talk about *e-health*.

According to Jackson, Trivedi and Baur (2020), good *e-Health* literacy allows individuals to participate more fully in health care activities and play a role in improving their outcomes.

The crisis of course naturally brought questions about distance communication to fill gaps due to the impossibility of face-to-face interaction in health.

There are two parts to this concept of *e-health*, one of which is easier associated with functional literacy, and a second part of the concept, much more difficult, related to interactive and critical literacy, which requires greater effort to triage, analysis and decision-making with regard to health information (Figure 1).

According Eysenbach, (2001) *e-health* is a model that is more than technological development. It is a way of thinking, an attitude and commitment of networking

to improve local, regional, national and global health, using information and communication technology.

METHODOLOGY

A systematic search of the following electronic databases was undertaken: MEDLINE, CINAHL, PsycINFO, EMBASE, ERIC and Web of Science. The terms searched were related to: digital health; digital strategies; e-health; health communication; health skills; recall; memorization; health instructions; adherence. The research was conducted from October 5 to November 30, 2020.

The author considered her previous literature reviews and her knowledge of health literacy and digital literacy to determine the keywords. The data obtained were segmented and categorized by search keywords and a qualitative content analysis was carried out.

In the context of the investigation and after the systematic review, four in-depth interviews were conducted with nurses who are at the forefront of the teleconsultation processes over telephone or video conference that reinforce the literature and with a project of a university that intends to shorten health distances with the elderly.

RESULTS AND DISCUSSION

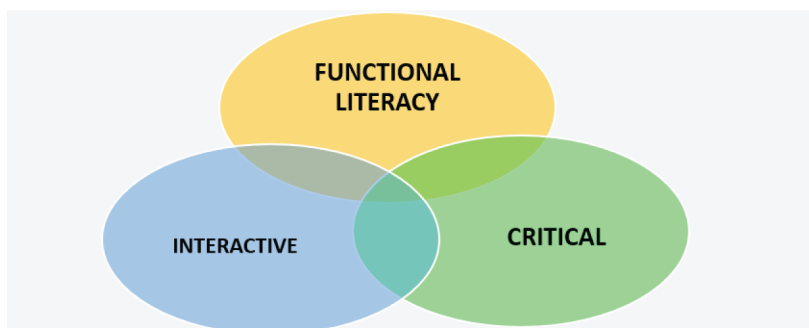
Portugal and Low Health and Digital Literacies

“ICT emerges as a strong alternative to disseminate health information and to promote and develop health actions and promote health literacy, especially for the youngest and most educated” (Espanha, Ávila & Mendes, 2016, p. 14).

The European Health Questionnaire Applied in Portugal (HLS-PT) shows that about 50% of Portuguese have low health literacy - access, understanding and use of health information (Espanha, Ávila & Mendes, 2016).

The themes associated with learning between generations, education and professions, as well as their contexts show that “the use of the Internet by the

Figure 1. 3 dimensions of Health Literacy



Source: Based on Nutbeam, 2000

Portuguese still presents great disparities, because, among people who do not know how to use the Internet or need help to do so, there are about 50% of the population living in Portugal. The generational issue associates others, such as educational levels, professional contexts and financial resources (Espanha, 2013, p. 16) (Figure 2).

In a national study on digital health literacy, almost 90% of respondents say they often use the internet to look for health information, but only 20% consider this information credible. (*Health Parliament*, 2017).

The main problems encountered in internet access were associated with credibility (78%) (figure 2) excessive amount of information (38%) and an immense diversity of sources of information in health on the Internet, *the famous Dr. Google* (Vaz de Almeida & Sebastião, 2018). At that time, the Health Information Technology Commission of *Health Parliament* Portugal reinforced the need to make sure the sources, as well as their credibility and the necessary investment in the training of professionals. (Figure 3).

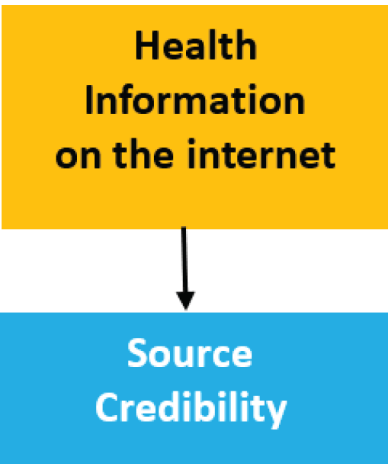
According to the Commission on Health Information Technologies (2017), in a survey of 3500 USERS of the SNS (*Portugal National Health System*), the results point to:

1. 60% of respondents admit to using the internet to look for symptoms of diseases and their meaning;
2. 47% search for available treatments
3. 43% of the information is about doctors and hospitals
4. 41% on disease prevention

Portugal: National Determination and European Guidelines

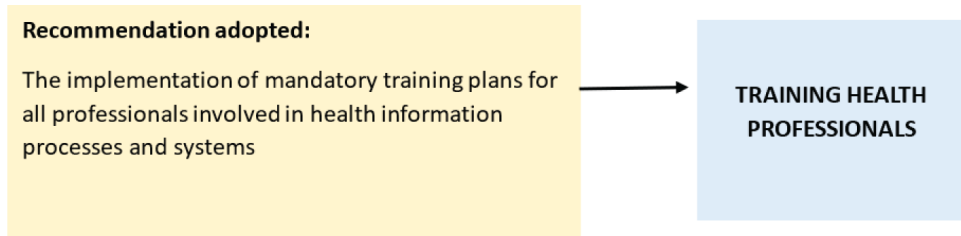
The path to digital health was started in Portugal a few years ago. In 2014, a group of experts met to create a new health pact (2014), the intended goal was to transform

Figure 2. Source credibility



Source: Own elaboration

Figure 3. Professionals training



Source: Own elaboration

the current system (hospital and disease-centred) into a people-centred, health-based system where citizens are partners in health promotion and care. It was also intended at that time a cross-sectoral health literacy programme that would prepare citizens in practical terms to stay healthy and, when sick, to participate in decision-making. In 2016, the 1st national literacy programme is published in health and self-care (Law n.º 3618-A/2016 and Law n.º 3454/2017).

On access to information, the expert group also warns of the need for only one single source of information, accredited accessible to all citizens, possibly integrated into the health portal. It was recommended that this source contain information about health, disease prevention, services provided and their quality. As well as a high priority has been given to the full implementation of an electronic health record, considered the essential basis for a high-quality integrated service. The Proximity SNS implements this design and creates this register of clinical data collected electronically, individually, produced by entities that provide health care to the citizen in the National Health Service (SNS) and that are consulted with the citizen's permission. The graceful circle begins to close, and the integration of services and care becomes more palpable and recognized by the citizen.

How to decrease the complexity of the system? Reducing system complexity implies: 1) Simplifying languages; 2) Improve communication; 3) Create clear "paths" for self-care, and promotion of "right" decisions in citizen health.

According to Levin-Zamir and Bertschi (2018), "system complexity is also reduced when people become more experienced with health literacy tasks and with the technology that can be used to apply health literacy skills" (p. 4).

Coleman (2020) affirms that, in contrast with people with lower income, "some populations for whom transportation, work schedules, or caregiving demands have traditionally been barriers to accessing facility-based health services could benefit from increased access to care via telemedicine" (p. e225).

For a better diversification of strategies that have more evidenced results, it is also necessary to involve the citizen and improve their motivation and knowledge, (Kim & Grunig, 2011, Tench and Konczos, 2013), for greater health promotion and disease prevention.

The results of research of Meppelink, van Weert, Haven and Smit (2015) show evidence that better and effective communication with spoken messages about

colorectal cancer screening and the positive attitudes of professionals, improved their recall and the attitudes of screening, compared to only written messages. (image + text). When communication is established in health via mobile phone, with image, sound, voice, text, it is thus possible to obtain a combination of media that, at the outset, allows to work the memory and health instructions of patients. But memory, for medical information, is a prerequisite for good adherence to recommended treatment (Kessels, 2003, p. 219).

Morrow et al. (1999) investigated the effects of ageing on memory for appointment-related information through an automated telephone messaging system, and the older adults answered fewer questions correctly (though there were no differences between young and old with respect to message repetition).

According to Levin-Zamir (2011), “the number of digital health offers has grown with impressive speed—an annual growth rate of about 25% (p. 2). The researchers (Levin-Zamir & Bertschi, 2011) affirms the growing importance of digital media and the need for researchers and health professionals to reflect on the necessary skills for users, and improve their health literacy, namely navigating the services, accessing relevant health information and adopting lifestyle changes (p. 2). In this process, and to increase patient’s comprehension and adherence, a study of Zieve, Dong, Weaver, Ong and Harvey (2019) says that constructive learning behaviors may be more likely to occur if health professionals are trained to invite patients to express ideas, inferences, and connections about treatment contents and provide scaffolding to patients who experience difficulty going beyond what the professionals has presented (p. 88). In the e-health communication process, it is imperative that the professional attend the steps that lead the patient to a better understanding of the health instructions.

Supporting initiatives that improve health literacy involves: 1) creating collaborative networks (SDGs 17); 2) to encourage groups and associations to “bridge” with health professionals; 3) a more effective intervention in projects in the community; 4) the training of health professionals through more information, knowledge, training.

Evaluating also means an imperative need to monitor, and therefore check if the system works and know what fails and why? To then intervene to improve (Figure 4).

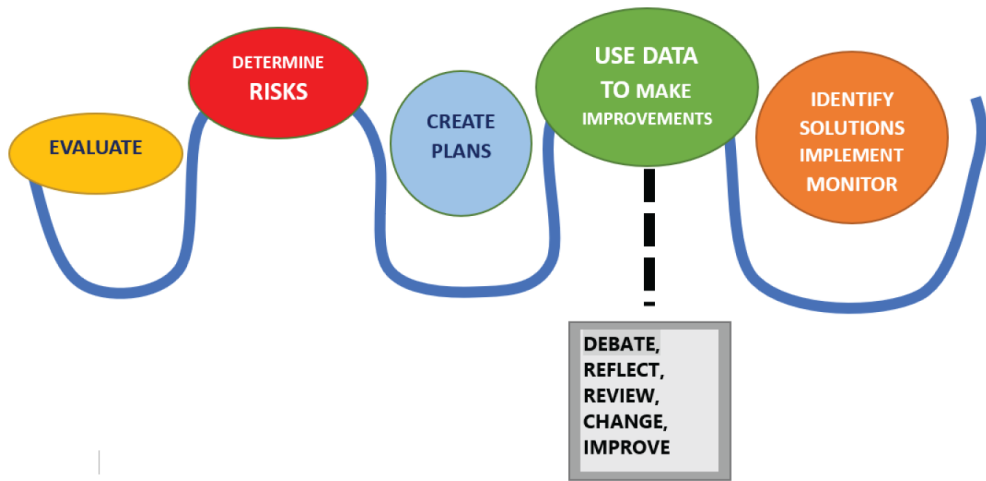
People, Evidence and Processes in Digital Environment

Investment in digital health requires the evaluation of at least three essential dimensions: people, physical evidence and processes. As for “people” we should ask the questions: What targeting do we want? Who accesses digital media? What people should be involved? What ethical questions arise when we talk about digital?

What Preparation Should the Health Professional Have?

Telemedicine or tele-health can be “virtual”, but on both sides of the line there is a real, human and clinical patient, in which each receives or provides health care from a physical environment. For example, there is evidence of the results obtained by the proximity of health professionals on several fronts, which is achieved through distance communication in COVID-19 pandemic time. Even before the crisis, the

Figure 4. Road map progress in the crisis: From evaluation to improvement



Source: Own elaboration based on Center for Health Design. (2017).

SNS 24 (Portugal telephone information healthcare service to support citizens in health) Screening, counseling and referral service for non-emerging acute illness was considered the best alternative to immediate source to hospital emergencies, with a care of about 1.5 million calls between January and July 2029, with an average waiting time for care of 30 seconds, involving several health professionals.

As for physical evidence, related to space and environments, is it necessary to think about how *to improve the service in e-health??* When health is virtual, what difference does the physical environment make? To consider: environment, sound, light, professional posture, dialogues/contents. The design of the spaces used for telehealth communication should thus maintain a level of security, privacy and quality of care and the patient experience. It is intended to be the same communication (or rather) as when it is performed in person.

The physical environment where teleconsultation takes place is important in order to achieve the best access to quality tele-health, experiences, health outcomes that support a safe and effective provision of care. For a quieter environment in digital health it is suggested that there is a soft and clear light to be able to see well the professional, environment of tranquility, silence or low noises not to interfere with the dialogue at a distance, and the colors of the environment be lighter and without many props.

When to the posture of the professional, it is recommended that you keep the body right, the coat well rested on the shoulders, that shows at least half body, that is, that the limit of visibility implies, at least see the neck and head of the professional and a little of the chest, the maintenance of a serene expression and do not eat the front of the patient (drink in small sips if necessary). When the contents of this human interaction, it is suggested the positive effort, the development of the ability to empathize and to place one in the “*skin of the other*”, a set of positive body movements, greet, for

example, with gestures, as well as a good management of emotions: understanding the “essence” of the patient’s health state (Egener & Cole -Kelly, 2013).

People and communities with lower income may have less reliable access to telephone service, which is needed for tele-health encounters (Coleman, 2020, p. e225). But the mobile phone, the video call, the *sms* have been the privileged means in this almost immediate adaptation and demanded by the pandemic that is widespread in the world and that becomes an effective barrier to face-to-face contact.

The book *50 techniques of health literacy in practice. A guide to health*” (Almeida, Moraes & Brasil, 2020), develops 50 health literacy techniques that can be used in a digital environment which addresses, among others, the following techniques: Importance of repetition; use of teach *back*; use of chunk and check ; care with the tone *of* voice; the pauses, the use of an inclusive language, the use of the ACP Model – Assertiveness, clarity of language and positivity (Vaz de Almeida, 2019; Vaz de Almeida & Belim, 2020), the importance of “social conversation” or care conversation (Greenhalgh & Heath, 2010).

The health process through digital brings ethical and legal and regulatory issues, in relation to understanding the impact of tele-health on future care delivery.

When reflecting on tele-health, teleconsultations, there is a number of participants who have to be trained, namely, for example, if we talk about tele stroke: *pre-hospital* staff, providers who will use the services, direct professionals (including intensive care another employees), radiology professionals, IT support, rapid response teams, as well as the community and all new hires who may be involved (telemedicine association).

Good Practices in Portugal: Health Interaction in Pandemic Times

There are also good experiences of virtual health meetings, such as those that take place at the IOGP - Instituto Oftalmológico Gama Pinto -, with Nurse Ana Veiga, or CHULC (Centro Hospitalar Universitário de Lisboa Central), with Nurse Susana Ramos), at ACES Arco Ribeirinho, ACES - with Nurse Patrícia Martins.

In the general opinion of these health professionals widely and deeply involved in maintaining the health of their patients and therefore, with increased efforts to make health at a distance work as well as face-to-face health, and come to the conclusion that the results have been very positive in the “health in a click”.

After individual interviews with these health professionals (nurses) and collection of their projects created during the pandemic, they confirm these virtual health meetings (teleconsultations) resulted in an “added value”, “in good results”, “in a positive surprise”, by the opportunity to maintain the continuity of follow-up and proximity to patients. This e-health process allowed ensuring continuity in the follow-up and reinforcement of health instructions especially among the older population.

We begin to briefly describe the success cases that resulted from an immediate adaptation to the pandemic context and that will be followed up in the future, in view of the positive obtained results.

CASE 1 - MPDETI - CLOSEST TO YOU - CHULC - LISBON - VIRTUAL VISITS (SINCE APRIL 2020) LED BY NURSE SUSANA RAMOS (CHULC)

This health intervention through teleconsultation covered from April to October 2020 *more than 600 direct interventions with patients over telephone and/or video call.* Multidisciplinary teams working together are involved in the process.

The recipients are elderly people over 70 years of age, in which most of them have some chronic or non-communicable disease (diabetes, hypertension).

It reveals the importance of proximity, care for language, the importance of repetition of information, especially in older people and with some inability to hear.

Social connection and the importance of the relationship are maintained through verbal and nonverbal communication.

Susana Ramos, CHULC says:

This project has been very rewarding for patients and families, but also for professionals. Today we had a live wedding for a sick woman: these are unforgettable moments for everyone.

She continues:

The project produced innovation, immediate response, proximity, ability to intervene by increasing patient health literacy. Through easy access, the mobile phone, even if without image, elderly patients were able to contact and be followed by the professional and health. We've also made an effort at the level of understanding. For that we have to talk in small blocks of information. We must also ensure the safety of the patient and the security of past information. Patients adhered promptly and achieved good results for their health. This is of course a project that will continue in the future. We were already working on time with distance communication tools, but this medium seems to us to be coming to stay.

CASE 2 - IN YOUR OWN VOICE. GUIDELINES FOR A GOOD TELECONSULTATION. NURSE ANA VEIGA, FROM IOGP (HOSPITAL WITH A LOW-VISION SPECIALTY)

The teleconsultation must be an effective and valid procedure for the patient. People when they communicate on the phone or by video call are still as they are. In this interaction communication is of particular importance and the following aspects should be taken into account: it should be scheduled, such as the face-to-face and the patient must have everything that is necessary with him to avoid being absent; should be done in a quiet, noise-free environment; Use a simple language; the professional should speak calmly and paused; speak in front of the screen; give the patient time to respond; ask the patient to transmit what he understood to validate the transmitted information.

CASE 3 - PROXIMITY: FOLLOW-UP - WATCH – ARTICULATE NURSE PATRICIA MARTINS - ACES - ARCO RIBEIRINHO (A PRIMARY HEALTH CARE UNIT)

Nurse Patricia Martins develops several interventions in the area of the primary care health unit. Its main recipients are people over 65 years old.

Through a methodology that widely uses the ACP Model (Health Communication Model – Assertiveness, Clarity and Positivity) (Almeida, 208, 2019, 2020) actions allow stimulating, boosting healthy lifestyles.

The combination of physical activity, participation in assertive, clear and positive communication, positive results are evidenced, says this nurse. However, the pandemic since March/April 2020 suspended face-to-face activities, but the contact, the permanence of the connection was continued through distance communication that mainly uses the personal mobile phones of patients.

With the activities on the ground currently suspended, Enf^a Patricia Martins (ACES Arco Ribeirinho) is in the management of cases of COVID-19 (screenings, epidemiological surveys and follow-ups of surveillance of high-risk contacts) Process by phone and email. This nurse says: *“I have used WhatsApp to communicate with some groups, but informally, as most seniors do not have digital skills. We provide our direct contact and email.*

In this phase of pandemic, the follow-up and monitoring of the health status of users by telephone or e-mail allows: Continuity of care/proximity; the transmission of information/communication; accessibility to health professionals; monitoring the community; monitoring health status closely; with close coordination with other health professionals and social partners.

CASE 4 - HOME SAFE - UNDER STUDY – UNIVERSITY NOVA (LISBON, PORTUGAL)

This case is a project that is being investigated and developed by a set of researchers of the University NOVA and associated to pandemic, may be applied to track other risk situations for the elderly.

This is remote contact system, through mobile phone that allows the screening and alert of the old people in health.

A group of seven students from University NOVA is developing a system for monitoring symptoms of COVID-19 infection, specifically designed and aimed at the old and info-excluded people (with low: health literacy and digital literacy). This investigation was led by Claudia Quaresma, professor at the Physics Department of NOVA University (LIBPhys-UNL) and Ana Rita Londral, from Value for Health CoLAB (VOH CoLAB).

He was concerned about integrating his target segment, that is, the elderly. In this sense, the researchers worked with their closest elderly relatives, grandparents. It is in the testing phase with end-users and specialist doctors in Aging.

CONCLUSION

Linking research to action (investigation-action) is one of the ways to improve knowledge about the form and effects of remote health services via mobile phone or videoconference. The personalization of health contact must be guaranteed, as well as the principles underlying interpersonal relationships. These must be balanced, maintain social connection, strengthen a potential symmetry, rewarding, with emotion in communication and continuous connection. Regular health professional contact represents that durable connection in time and safe health instructions.

The personal phone is a means of quickly reaching the patient and establishing the proximity connection that is required. The pandemic required an almost immediate adaptation but have been established for many years forms of communication in remote health and teleconsultations.

Professionals need to develop verbal and nonverbal communicative skills to establish strong distance relationships and enhance health outcomes.

The road to digital is ongoing. Health solutions have often been representative of resilience, creativity and the commitment of health professionals. It requires, however, support, training, ability to manage this tool that probably came to stay, with or without pandemic. Awareness of urgency persists with due care, e-health is here to stay and is a healthy choice.

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