DIGITAL HEALTH AT CENTRAL LISBON UNIVERSITY HOSPITAL CENTER: STRATEGIC REFLECTIONS AND VALUE PROPOSITION

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ABSTRACT

BACKGROUND

Technological revolutions impact all sectors of society, including the health care sector, offering unprecedented improvement opportunities and enabling greater predictive and proactive capacity, personalization, better quality of service, and effective and efficient management of resources.

Digital health emerges in the context of technological advancement, responding to the challenges of health care systems based on safe, quality health care services, offered in a timely manner, and in an efficient and effective way. Throughout history, the evolution of healthcare and medicine has been an extraordinary achievement of great value to humanity, but modern medicine is unlikely to reach its full potential without the use of digital health technologies through the use of advanced computing technology (i.e., robotics, the Internet, Artificial Intelligence (AI) and genome editing).

In this sense, it has attracted global attention and debate in recent decades, most recently driven by the emergence of the Covid-19 pandemic.

However, digital health also brings challenges that are essentially related to change management within organizations.

METHODS

Based on Problem Structuring Methods (PSMs), this study sought to investigate the digital health topic in the specific case of Central Lisbon University Hospital Center (CHULC in Portuguese), aiming to reflect on initiatives that enhance digital health benefits within this organization and that contribute to its digital transformation. For this purpose, Interpretive Structural Modeling (ISM) was used, which allowed us to identify and understand the cause-effect relationships between determinants of digital health in this context, involving CHULC in the strategic reflection on the subject through a collaborative and constructivist approach. The main results of this study were validated in collaboration with CHULC, and a set of actions was formalized to enhance its digital health value proposition. We also carried out a literature review on this topic to identify the relevant studies in this context and the relevant determinants that impact the implementations of the digital health initiatives.

RESULTS

Getting started we conduct a Nominal Group Technique (NGT) with the CHULC decision makers to identify the potential initiatives. Based on the discussion and sharing of experiences and opinions, the session lasted over four hours. The panel of decision makers considered 21 initiatives, as shown in Table1, and finished off with the Structural Self-Interaction Matrix (SSIM).

Table 1. Potential DH Initiatives.

DH Initiatives at CHULC
IN01 – Burnout - Workers' mental health
IN02 – Telemonitoring
IN03 – Digital hospital (dedicated unit)
IN04 – Clinical early warning system (track and trigger) for analysis of clinical deterioration
IN05 – Training and awareness of professionals in the use of digital tools
IN06 – Digital maturity in the use of data
IN07 – Artificial intelligence in predicting illness patterns
IN08 – Mobile application to facilitate patient -hospital communication
IN09 – Telehealth
IN10 – Clinical governance of digitalization (*i.e.*, data interoperability/integration)
IN11 – Optimizing use of peer-to-peer information sharing tools
IN12 – Improved communication between various levels of care
IN13 – Creation of a knowledge centre (*e.g.*, DM and TM)
IN14 – Encouraging the use of formal channels of communication (professionals)
IN15 – Improving the technical conditions of the base structures
IN16 – New health professions (*e.g.*, systems architecture and data science)
IN17 – Automated speech recording (professionals)
IN18 – AI-enabled speech recordings for diagnosis purposes (patients)
IN19 – National health data protection register
IN20 – Digital literacy of patients
IN21 – Cybersecurity

Following we conduct our analysis accordingly to the ISM Process Stages, to achieving in the seven steep of analysis the final model that represents at the first level the most important initiatives, which deserve priority focus and at the second level, there are initiative with a high degree of dependence, very important for sustaining the initiatives at the first level, with a strong two-way interconnection.

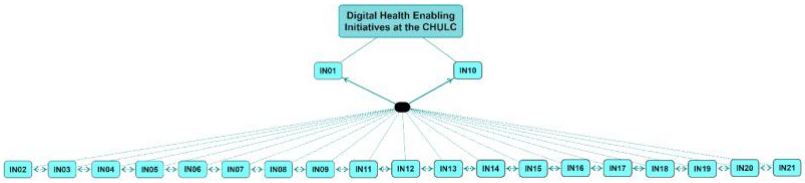


Figure 2. Final model of the 21 Initiatives Elicited by the Decision-Makers Panel.

CONCLUSION

When analyzing *Figure 2*, it can be concluded that there is a strong interconnection between the 21 initiatives represented at the two levels of the model. At the first level, the most important initiatives, previously presented in *Table 1*, are displayed, which present themselves as key and strategic initiatives in driving DH at CHULC and which deserve priority focus. At the second level, there are initiatives with a high degree of dependence, very important for sustaining the initiatives at the first level, with a strong two-way interconnection. Their progressive implementation will support and positively enhance the initiatives of the previous hierarchical level. As found in level 1 of the hierarchical model of key initiatives developed, it is important to highlight the initiatives that present the maximum Dp Pw, and which should be the first focus of decision-makers. Specifically, these initiatives are: IN01 – *Burnout - Workers' mental health*; and IN10 – *Clinical governance of digitalization initiative*. The starting point here can be realized by the strategy of the digital hospital *"dedicated DH unit"*, whose strategy includes the implementation of key initiatives that can be grouped by projects.