

Digital Health in a 100% SUS Philanthropic Hospital: The Experience of Professor Fernando Figueira Institute of Integral

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Abstract

Objectives: This study aims to chronologically and interpretatively describe the experience of implementing and consolidating Digital Health at the Professor Fernando Figueira Institute of Integral Medicine (IMIP) in Recife, Pernambuco. **Methods:** This is an experience report with a historical-descriptive approach to systematically outline the initiative's trajectory. It analyzes historical milestones, decision-making contexts, adopted strategies, challenges faced, and results achieved. **Results:** The implementation of Digital Health at IMIP faced significant challenges, especially from external political factors. This requires persistence and local strategies for rapid adaptation and articulation to ensure its success. The COVID-19 pandemic was an important catalyst, accelerating the adoption of digital technologies among healthcare professionals. This context allowed overcoming initial barriers and consolidating digital health in both assistance and care management. **Conclusions:** The implementation trajectory of Digital Health at IMIP demonstrates that, despite initial difficulties, the experience was successful in promoting important advances in the use of technologies to improve healthcare. This report contributes to the understanding of the processes involved in the implementation and provision of digital health services by non-profit philanthropic institutions, offering support for the replication of this experience in other contexts.

Key-words: Secondary Health Care, Telemedicine, Biomedical Technology.

Resumen

Salud digital en un hospital filantrópico 100% SUS: la experiencia del Instituto de Medicina Integral Profesor Fernando Figueira

Objetivos: Describir, cronológica e interpretativamente, la experiencia de implementación y consolidación de la Salud Digital en el Instituto de Medicina Integral Profesor Fernando Figueira (IMIP) en Recife, Pernambuco. **Métodos:** Informe de experiencia con un enfoque histórico-descriptivo, sistematizando la trayectoria de la iniciativa a partir del análisis de hitos históricos, contextos de toma de decisiones, estrategias adoptadas, desafíos enfrentados y resultados alcanzados. **Resultados:** La implementación de la Salud Digital en el IMIP enfrentó desafíos significativos, especialmente políticos externos, que requirieron persistencia y estrategias locales de una rápida adaptación y articulación que garantizaran su viabilidad. La pandemia de COVID-19 fue un catalizador importante, impulsando la adopción de tecnologías digitales por parte de los profesionales de la salud. Este contexto permitió superar las barreras iniciales y consolidar la salud digital tanto en la atención como en la gestión del cuidado. **Conclusiones:** La trayectoria de la implementación de la Salud Digital en el IMIP demuestra que, a pesar de las dificultades iniciales, la experiencia promovió avances importantes en el uso de tecnologías para mejorar el cuidado en salud. Este informe contribuye a la comprensión de los procesos involucrados en la implementación y oferta de servicios de salud digital por instituciones filantrópicas sin fines de lucro, ofreciendo apoyo para replicar esta experiencia en otros contextos.

Palabras clave: Atención Secundaria de Salud, Telemedicina, Tecnología Biomédica.

Resumo

Saúde digital em hospital filantrópico 100% SUS: experiência do Instituto de Medicina Integral Professor Fernando Figueira

Objetivos: Descrever, de forma cronológica e interpretativa, a experiência de implantação e consolidação da Saúde Digital no Instituto de Medicina Integral Professor Fernando Figueira (IMIP) em Recife, Pernambuco. **Métodos:** Relato de experiência com abordagem histórico-descritiva, sistematizando a trajetória da iniciativa a partir da análise de marcos históricos, contextos decisórios, estratégias adotadas, desafios enfrentados e resultados alcançados. **Resultados:** A implementação da Saúde Digital no IMIP enfrentou importantes desafios, especialmente políticos externos, exigindo persistência e estratégias locais de adaptação e articulação rápida para garantir sua viabilidade. A pandemia de COVID-19 foi um catalisador importante, impulsionando a adoção de tecnologias digitais pelos profissionais de saúde. Esse contexto permitiu superar barreiras iniciais e consolidar a saúde digital tanto na assistência quanto na gestão do cuidado. **Conclusões:** A trajetória de implantação da Saúde Digital do IMIP demonstra que, apesar das dificuldades iniciais, a experiência foi bem-sucedida em promover avanços importantes na utilização de tecnologias para a melhoria do cuidado em saúde. Este relato contribui para a compreensão dos processos envolvidos na implementação e oferta de serviços de saúde digital por instituições filantrópicas sem fins lucrativos, oferecendo subsídios para a replicação dessa experiência em outros contextos.

Palabras-chave: Atenção Secundária à Saúde, Telemedicina, Tecnologia Biomédica.

INTRODUCTION

The implementation of Digital Health at the Professor Fernando Figueira Institute of Integral Medicine (IMIP) has distinct characteristics in the Brazilian context. Unlike other telehealth centers in the country, IMIP is not linked with a university. Instead, it is connected to a large, non-profit, philanthropic hospital that provides exclusive care to the Unified Health System (SUS). Founded in 1960 by a group of physicians led by Professor Fernando Figueira, IMIP has become one of the four largest SUS hospital institutions in terms of quantity of beds and accreditations, performing more than 600,000 outpatient consultations annually.

Beyond the assistance, IMIP stands out for its teaching, research, and community outreach activities. It is a national and international benchmark in the training of human resources in health, working with governmental and non-governmental organizations through research, training, and technical workshops. Currently, it offers 48 Medical Residency programs, 13 Uniprofessional Residency programs, and 6 Multiprofessional Residency programs, totaling more than 600 places, highlighting its structuring role in health education. Its *stricto sensu* postgraduate program, rated 6 by the Coordination for the Improvement of Higher Education Personnel (CAPES-Coordenação de Aperfeiçoamento de Pessoal de Nível Superior), was a pioneer in adopting active learning methodology, maintaining the founder's legacy of training highly qualified professionals committed to the health needs of the population.

IMIP has been involved in telehealth initiatives since 1993, when it launched a twinning program with St. Jude Children's Research Hospital. The focus of the distance learning through telehealth services began in 2006. Subsequently, the IMIP Telehealth Center (NTES IMIP) was established as a technical-scientific center through IMIP Presidential Decree number 14/2010. NTES IMIP was a member of the University Telemedicine Network (RUTE/RNP/MCTic), part of the National Telehealth Program Brazil Networks of the Ministry of Health, and responsible for the first Telehealth Pilot Project for Indigenous Health in Northeast Brazil, which began as an implementation in 2013 and operated regionally until 2021, covering 6 Special Indigenous Health Districts (DSEIs) and totaling 56 implemented base centers. In 2022, IMIP Digital Health was formalized, succeeding NTES IMIP. The new structure represents the institutional maturation of the initiatives and their expansion towards a more comprehensive approach. This report aims to describe the experience of implementing Digital

Health at IMIP, highlighting its historical milestones, strategies adopted, results achieved, and the challenges faced in consolidating an integrated digital health model in a philanthropic institution that operates exclusively within the scope of the Unified Health System (SUS).

METHODOLOGY

This is an experience report with a historical-descriptive approach. It aims to systematize the trajectory of the implementation of Digital Health at the Professor Fernando Figueira Institute of Integral Medicine (IMIP). The analysis focused on identifying and describing the main historical milestones of the initiative. It contextualized the institutional, political, and technical factors that influenced strategic decisions over time. The implementation stages were examined, including the transition from the Telehealth Center (NTES IMIP) to the current IMIP Digital Health. Also, the processes of joining national programs, institutional partnerships, and innovation actions in digital health were explored. The operational processes adopted, the quantitative results recorded throughout the period, and the challenges faced in consolidating digital health strategies at the institution were analyzed. Since this is an experience report based on aggregated institutional data, without individual patient identification, submission to the Research Ethics Committee was not required.

RESULTS

1. HISTORICAL MILESTONES

IMIP has been involved in telehealth initiatives since 1993, when the twinning program between St. Jude Children's Research Hospital and IMIP was launched. Through this partnership, weekly videoconference sessions were held to discuss acute lymphoblastic leukemia (ALL) with pediatric oncologists, residents, nurses, and social workers. Within 9 years of the twinning program's launch, the overall survival rate of IMIP patients with low-risk ALL in the "pre-telehealth era" was 77%, rising to 92% in the "post-telehealth era." The overall survival rate of high-risk patients increased from 58% to 78%¹.

The provision of telehealth services focused on distance learning began in 2006 with the development of the Basic Course in Health Assessment, support for in-person master's degree teaching, the creation of the EAD/AMQ project, and the integration of Telehealth and Telemedicine into the hospital environment^{2,3}. Subsequently, the IMIP Telehealth Center (NTES IMIP) was established through IMIP Presidential Decree number 14/2010,

and in 2018, IMIP officially became a member of the University Telemedicine Network (RUTE/RNP/MCTic), with 2 video collaboration rooms equipped with high-definition equipment.

NTES IMIP was responsible for the first telehealth pilot project for indigenous health in the Brazilian Northeast region. This project began implementation in 2013 and operated regionally until 2021, covering six Special Indigenous Health Districts (DSEIs) and totaling 56 implemented base centers. In 2018, the project received the INOVASUS Award, as announced through Ordinance number 337 on December 27, 2018, in the category of process improvement for strengthening work management in the SUS^{4,5}.

In 2020, during the COVID-19 pandemic, IMIP management implemented remote consultations in the outpatient service. The beginning of the pandemic led to a 73.4% decrease in in-person outpatient care at the institution (between April 2019 and April 2020), and 67,810 teleconsultations were recorded from March 19, 2020 to December 31, 2021. Teleconsultations accounted for 15.61% of the history of in-person care. Most teleconsultations were conducted by nurses (44.05%), followed by speech therapists (25.84%) and physicians (10.11%)⁶.

In 2022, IMIP Digital Health was formalized, succeeding NTES IMIP. In 2024, IMIP implemented an organizational restructuring that created the Innovation Directorate, incorporating the actions of the Digital Health Coordination and the Data Science and Artificial Intelligence Laboratory.

2. INDIGENOUS REGIONAL TELEHEALTH PROJECT

The initiative began in 2013 at the Telehealth Center of the Professor Fernando Figueira Institute of Integral Medicine (NTES-IMIP). It encompasses the Special Indigenous Health Districts (DSEIs) in Pernambuco, Alagoas-Sergipe, Paraíba, Ceará, Bahia, and Maranhão, with a total of 56 base centers established. The project aimed to provide tele-education and teleconsultation services⁷.

Five distance learning (EAD) courses were developed: Basic Mental Health Course for Indigenous Health; Introductory Course to Indigenous Health in the Northeast; Pediatric Dermatology in Indigenous Health Course; Exanthematous Diseases in Childhood Course; and Comprehensive Care for Pregnant Women and Indigenous Newborns Course. Of the total number of health professionals participating in the EAD courses offered, 100% of these professionals, at the end of the course, understood the central principles of the subject matter and the content

covered contributed to improving their professional performance⁷.

Teleconsultation services were also available in both synchronous and asynchronous modalities. NTES IMIP provided access to professionals in 23 medical specialties, 4 dental specialties, and 7 nursing specialties, and to professionals in the areas of psychology, physiotherapy, pharmacy, social work, and nutrition, totaling 49 teleconsultants, supported by³ teleregulators and 2 monitors⁷.

From 2015 to 2018, 1,594 teleconsultations were conducted; from 2019 to 2020, 737 teleconsultations; and in 2021, 170 teleconsultations were conducted. Of the total teleconsultations (2,501), 78% were evaluated by users as “complete clarification of the doubt,” and 93% of the requesting professionals reported being very satisfied/satisfied with the service offered. Of the requests for specific patients evaluated by users and intended for referral to a specialist (1,546), 25% were evaluated as avoiding referrals in 2015, 39% in 2016, 46% in 2017, and 75% in 2018⁷. In 2018, the project was awarded the INOVASUS 2018 Prize^{4,5}.

During the COVID-19 pandemic, the project team transferred knowledge to the Special Indigenous Health Districts (DSEIs) of Pernambuco and Ceará, enabling them to autonomously implement teleconsultation/teleguidance services within their healthcare networks. A total of 316 remote consultations were conducted, offered by physicians, nurses, and psychologists from the DSEIs⁸.

3. TELECONSULTATION IN SPECIALIZED OUTPATIENT CARE

In the context of the COVID-19 pandemic, remote care was implemented in March 2020 for patients under follow-up in internal services, using the RUTE-RNP infrastructure.

During the period from March 19, 2020, to December 31, 2021, a total of 67,810 teleconsultations were recorded. Teleconsultations represented 15.61% of all in-person consultations over this time. The majority of teleconsultations were conducted by nurses (44.05%), followed by speech therapists (25.84%) and physicians (10.11%)⁹.

With the complete implementation of the electronic medical record and the availability of the teleconsultation module, IMIP expanded the provision of teleconsultations in several specialties. According to data extracted from the DATASUS outpatient information system, IMIP continues to perform most of the teleconsultations in the state of Pernambuco, around 46% of all teleconsultations performed in the state.

At the end of 2023, the “virtual first” modality was implemented in clinical medicine, which consists of conducting the patient's first consultation at the institution remotely. In this teleconsultation modality, we achieved a Net Promoter Score (NPS) of 79.

4. ONCOHELP PROJECT

At the end of 2023, IMIP's digital health project submitted a proposal to the Secretariat of Information and Digital Health (SEIDIGI) of the Ministry of Health, with activities beginning in January 2025. The intervention involves actions from the four axes of the WHO's classification of digital health interventions¹⁰. In terms of financial impact, it is expected to reduce the cost of TFD – Treatment Outside the Home, with the potential to reduce travel by approximately 10% to 15% in pre-chemotherapy, according to an internal survey consistent with estimates in the literature¹¹, and a potential reduction of approximately 19% in post-chemotherapy travel, also consistent with estimates in the literature¹².

DISCUSSION

The results showed that telehealth was initially incorporated as a tool to improve care in pediatric oncology, within the context of the international twinning program, and had a measurable impact on clinical outcomes¹. Twinning programs between countries with different income levels improve care in pediatric oncology, and the integration of telemedicine strengthens care, training, collaborative research, and the quality and use of resources¹. The increase in survival rates observed in the post-implementation period shows that digital interventions can contribute concretely to improving the quality of specialized care.

Subsequently, the actions expanded to include continuing education and support for primary care, especially in the context of indigenous health. The Unified Health System faces challenges to implement quality primary care in a country with profound socioeconomic and territorial inequalities¹³. This scenario is even more complex when it comes to the organization of indigenous health care¹⁴. In this context, improving referrals to specialists can contribute to reducing social problems and rationalizing public spending. The results of the Indigenous Regional Telehealth Project demonstrated a high percentage of clarification of doubts and a progressive increase in the avoidance of unnecessary referrals, indicating potential for improving care and optimizing resources⁹.

The institutionalization of synchronous teleconsultation proved to be a relevant strategy for

overcoming low spontaneous demand, reinforcing the need for the formal incorporation of digital tools into the work processes of the teams. Experience has shown that simply making technology available does not guarantee its use, and alignment between management, goal setting, and integration into care routines is essential.⁹

During the COVID-19 pandemic, there was a notable acceleration in the digital transformation process, leading to a rapid expansion of tele-guidance and the establishment of teleconsultation as a complementary care modality¹². The significant decrease in face-to-face appointments, combined with the structured implementation of remote care, enabled ongoing monitoring of patients, particularly those in high-risk groups. The continued strong participation in teleconsultations suggests that this strategy has become firmly established in the period following the peak of the crisis.

However, significant challenges were identified along the process. The financial transfer model through agreements proved vulnerable to delays and discontinuities, hindering budgetary predictability and team stability¹⁵. Regulatory limitations related to the billing of teleconsultations in the SUS table also constituted barriers to the sustainable expansion of the modality⁹. In addition, the turnover of managers and professionals, especially in the context of indigenous health, negatively impacted the pace of institutionalization of actions. Initial technological barriers, including the level of computerization of the institution and patients' access to devices with connectivity, also represented challenges, although partially overcome throughout the process.

Experience shows that the sustainability of digital health in SUS depends not only on technological innovation, but also on institutional governance, regulatory stability, and adequate funding. The consolidation observed at IMIP suggests that structured models, integrating care, education, and data management. It can strengthen the capacity of the public health system to respond to complex demands, provided by regulatory and financial support compatible with the expansion of digital interventions.

CONCLUSION

The implementation trajectory of Digital Health at IMIP demonstrates that, despite initial difficulties, the experience was successful in promoting important advances in the adoption of technologies to improve healthcare. The main challenges involved the funding model, regulatory limitations on billing, staff turnover, and structural and technological barriers.

This report contributes to the understanding of the processes involved in the implementation and provision of digital health services by non-profit philanthropic institutions within the SUS, offering subsidies for the replication of this experience in other contexts.

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