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THE EXPERIENCE OF TELEHEALTH IN THE SUS FROM THE PERSPECTIVE OF SPECIALIZED CARE PROJECTS

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ABSTRACT

This article evaluates a telemedicine model implemented in Intensive Care Units (ICUs) nationwide through the Proadi SUS program of the Ministry of Health. The project involved a partnership with five Excellence-Recognized Health Entities (ESRE): HIAE, HAOC, BP, HCor, and HSL. The goal was to share expertise with professionals in public ICUs facing a shortage of specialists. The methodology included telerounds conducted by multidisciplinary teams and setting care goals recorded digitally. Results showed a significant increase in televisits and a reduction in the standardized mortality rate from 1.41 to 1.13. It concludes that telemedicine improved access and quality of intensive care, aligning with the Ministry of Health's Strategic Vision for Digital Health.

Keywords: Digital Health. SUS. Telemedicine. Health Technology. Teleuse.

A EXPERIÊNCIA DA TELESAÚDE NO SUS NA PERSPECTIVA DOS PROJETOS DA ATENÇÃO ESPECIALIZADA

RESUMO

Este artigo apresenta um modelo assistencial de telemedicina implementado nas UTIs nacionais através do programa PROADI-SUS do Ministério da Saúde. O projeto envolveu a parceria de cinco Entidades de Saúde Reconhecidas pela Excelência: HIAE, HAOC, BP, HCor e HSL. O objetivo foi compartilhar expertise com profissionais das UTIs públicas, onde há carência de especialistas. A metodologia incluiu telerounds conduzidos por equipes multiprofissionais e o estabelecimento de metas de cuidados registradas digitalmente. Os resultados mostraram um aumento significativo nas televisitas e uma redução na taxa de mortalidade padronizada, de 1,41 para 1,13. Conclui-se que a telemedicina melhorou o

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acesso e a qualidade da assistência intensiva, alinhando-se com a Visão Estratégica de Saúde Digital do Ministério da Saúde.

Palavras-chave: Saúde Digital. SUS. Telemedicina. Tecnologia na Saúde. Teleuti.

LA EXPERIENCIA DE TELESALUD EN EL SUS DESDE LA PERSPECTIVA DE PROYECTOS DE ATENCIÓN ESPECIALIZADA

RESUMEN
Este artículo presenta un modelo de atención de telemedicina implementado en UCI nacionales a través del programa PROADI-SUS del Ministerio de Salud. El proyecto contó con la colaboración de cinco Entidades de Salud Reconocidas por su Excelencia: HIAE, HAOC, BP, HCor y HSL. El objetivo fue compartir la experiencia con profesionales de UCI públicas, donde existe escasez de especialistas. La metodología incluyó televisitas dirigidas por equipos multidisciplinarios y el establecimiento de objetivos de atención registrados digitalmente. Los resultados mostraron un aumento significativo de las televisitas y una reducción de la tasa de mortalidad estandarizada, de 1,41 a 1,13. Se concluye que la telemedicina mejoró el acceso y la calidad de los cuidados intensivos, en consonancia con la Visión Estratégica de Salud Digital del Ministerio de Salud.

Palabras clave: Salud Digital. SUS. Telemedicina. Tecnología en Salud. Teleuti.

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1 INTRODUCTION

A little over 30 years have passed since the enactment of the Organic Law of the SUS (Law 8.080/1990), and reflecting on all that was expected of Brazil's Unified Health System (SUS), we can say—in a traditional rhetorical sense—that much has changed since then. There have been many achievements, but at the same time, persistent challenges remain unresolved.

Some advances are evident, with concrete and targeted actions that have transformed into genuine public health policies. Examples include the Family Health Strategy, Popular Pharmacy Program, Mobile Emergency Care Service (SAMU), Brazil Smiles Program, My Digital SUS, among others. These initiatives have generated and continue to produce significant results in healthcare delivery in Brazil, elevating SUS to a level of responsibility not far from what some pioneers of the sanitary reform envisioned.

On the other hand, numerous obstacles persist, largely due to the natural evolution of society, which is undergoing demographic and epidemiological transitions marked by a triple burden of disease. There is a high incidence of chronic conditions that disproportionately affect the aging segments of the population (OLIVEIRA, 2019).

Adding to these challenges are other issues, including insufficient funding for a system of SUS's magnitude, which serves more than 150 million people directly (Brazil, 2022), as well as the continued dominance of a healthcare model that remains biomedical, hospital-centric, and disease-focused (PAIM, 2009).

However, it is important to highlight that biological factors alone do not explain the transformations impacting SUS over the years. Throughout this period, there has been significant scientific and technological progress in healthcare, including the increasingly common use of telehealth tools. These often serve as responses to the need to expand access to vulnerable populations and reduce the in-person flow of patients in healthcare facilities (SANTOSCATA PAN et al., 2024; BRAZIL, 2024).

According to the Federal Medical Council Resolution (CFM) No. 2,314/2022, seven modalities of telemedicine are defined and regulated, enabling the practice of medicine mediated by communication technologies. These include: a) teleconsultation; b) teleinterconsultation; c) telediagnosis; d) telesurgery; e) telemonitoring or tele-surveillance; f) teletriage; and g) teleconsulting. These modalities have the potential to streamline and address demands within SUS as real and promising initiatives (Brazil, 2022).

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This article aims to evaluate the impact of telemedicine on intensive care, based on the results achieved by the TeleICU project, an initiative of the Institutional Development Support Program of the Unified Health System (PROADI-SUS). The project seeks to enhance the quality of care provided in public Intensive Care Units (ICUs) by connecting these units with a network of specialists, overcoming care gaps, and ensuring qualified, collaborative management of critically ill patients.

Created in 2009, PROADI-SUS is a public policy that links the Ministry of Health with centers of excellence hospitals, aiming to support the institutional development of SUS through projects focused on management qualification, continuous education, applied research, technological incorporation, and specialized care.

According to Mendes (2021), PROADI-SUS stands as an important public health innovation strategy, promoting knowledge and technology transfer to the public sector through the expertise of participating hospitals.

The impact of the TeleICU project was analyzed based on data provided by the Health Entities Recognized for Excellence (ESREs) involved, using information extracted from the annual financial and activity reports submitted by these institutions, as shown in Table 1.

Table 1

Centers of Excellence Participating in the Project

Hospital Israelita Albert Einstein - HIAE;
Hospital Alemão Oswaldo Cruz - HAOC;
Hospital do Coração - Hcor;
Beneficência Portuguesa - BP, e
Hospital Sírio-Libanês - HSL .

Source: Authors' elaboration (2024).

These hospitals contributed their expertise and advanced practices to strengthen care in public ICUs. The data analysis aimed to identify the concrete impacts of telemedicine on the quality of intensive care and the well-being of the population served, reflecting the project's effectiveness and benefits for the healthcare system as a whole.

2 THEORETICAL FRAMEWORK

2.1 SUS, HEALTH TECHNOLOGIES, AND DIGITAL HEALTH

Brazil's Unified Health System (Sistema Único de Saúde – SUS) is recognized worldwide as a benchmark for public health services and serves as a model for numerous countries. According to the National Health Survey (Pesquisa Nacional de Saúde – PNS)

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published by the Brazilian Institute of Geography and Statistics (IBGE) in 2019, seven out of ten Brazilians, over 150 million people, rely exclusively on SUS for their healthcare needs.

As noted by Stopa et al. (2020), the 2019 PNS is of paramount importance for the ongoing monitoring of health indicators, and translating these data into policies or actions aimed at improving SUS represents significant progress for Brazilian public health. The findings from the 2019 PNS underscore the relevance, reach, and impact of SUS.

The management of SUS is a shared responsibility between the Ministry of Health, the central body responsible for formulating national health policies, and the state and municipal governments, as mandated by the 1988 Federal Constitution (CF-88), which asserts that "health is a right of all and a duty of the State," providing universal, free, and equitable access to healthcare for all citizens.

Each level of government holds specific responsibilities. SUS was established and regulated by the Organic Health Law (Law No. 8,080/1990), which governs the conditions for health promotion, protection, and recovery, as well as the organization and operation of corresponding services, among other provisions.

The fundamental principles of SUS include universality, equity, and comprehensiveness, while its organizational principles encompass regionalization and hierarchy, decentralization with unified command, and popular participation. According to Matta (2007), these principles and guidelines form the foundation for SUS's operation and organization, affirming rights historically won by the Brazilian people and reflecting a democratic, humanistic, and federalist model.

Structured across levels of care, SUS operates from primary care, providing basic services such as community health agent visits, blood pressure monitoring at Basic Health Units (Unidade Básica de Saúde – UBS), to more complex services, including vaccine production in laboratories or health industries, urgent care at Emergency Care Units (Unidade de Pronto Atendimento – UPA), emergency response via Mobile Emergency Care Service (Serviço de Atendimento Móvel de Urgência – SAMU), consultations with general practitioners and specialists, diagnostic exams, medication distribution, hemodialysis, hospital care, rehabilitation services, gender transition support, chronic disease management, prenatal care, oncology treatments, organ transplants, among others.

The challenges facing any health system are constant and multifaceted, with new demands emerging regularly, whether in response to a new disease such as COVID-19 or

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through the incorporation of novel medications, cutting-edge technologies, and frequent technological advancements.

According to Catapan et al. (2024), the organization and use of technologies within health systems must be carefully planned and guided by strategies that consider various dimensions of care, enabling the translation of scientific evidence into practical applications in healthcare services. In this regard, the World Health Organization (WHO, 2011) defines health technology as the “application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures, and systems developed to solve a health problem and improve quality of life. ”

Complementing this view, Merhy (2002) emphasizes that health technology is not limited to equipment and supplies but also encompasses modes of practice and care, involving the relationships between healthcare professionals and users. For Merhy, “light technologies”, those centered on listening, welcoming, and fostering bonds, are essential for transforming health work and enhancing care quality. Therefore, technology should be understood broadly, incorporating subjective, relational, and organizational aspects into the daily routine of health services.

The use of health technologies depends on the interaction among diverse actors (patients, healthcare professionals, managers, health services, among others), requiring strategic planning that can influence adherence, acceptability, and availability of technologies (CATAPAN et al., 2024).

According to Haddad and Lima (2024), Digital Health and its developments offer immense potential benefits to society. The relevance of digital health is growing, as evidenced by the creation of the Secretariat of Information and Digital Health (Secretaria de Informação e Saúde Digital – SEIDGI) within the Ministry of Health, tasked with formulating public policies and fostering societal debate on digital health.

Furthermore, Boni, Falcão, and Murtinho (2023) highlight that technologies based on robotics, artificial intelligence, and telehealth have significant potential to directly benefit individuals by enabling complex diagnostics and treatments to be conducted remotely.

2.2 TELEMEDICINE: ADVANTAGES AND IMPACTS

With rapid technological advancements and swift changes in the global landscape, telemedicine has emerged as a crucial solution for saving lives, especially in remote and hard-to-reach areas.

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Hallem et al. (2021) emphasize that telemedicine offers a unique opportunity to provide medical care through prompt diagnoses and treatments. Recognized as an effective response to address gaps in healthcare delivery, telemedicine has demonstrated its efficacy across various medical specialties.

According to Jacovas et al. (2021), the use of technological equipment in telemedicine has shown positive outcomes, particularly in pediatrics and intensive care units (ICUs), contributing to a reduction in hospital admissions. This model, initially developed in Brazil, has been globally adopted due to its impact and efficiency.

Several futurist scholars have explored the profound transformations expected to shape the future of society. The futurist author Toffler (1980) anticipates that the third wave of technological change will bring significant impacts across multiple domains, including healthcare.

These innovations will not only enable substantial advances in disease treatment but also redefine the structure of health systems and the very conception of medicine (TOFFLER, 1980).

Similarly, Harari (2015) highlights that just as any place can be transformed into a classroom with the appropriate use of technology, the medical office can also be adapted into a dynamic, interactive virtual environment.

With the growing acceptance of remote medical consultations, which offer low cost and accessibility regardless of location, medical practice has evolved to incorporate new technological tools. In this way, technology is redefining not only how education is delivered but also how healthcare is accessed, transforming traditional clinical practice.

The Tele-ICU Project is an initiative designed to strengthen and enhance public health in Brazil. Its primary goal is to provide support to SUS institutions, promoting integration and efficiency in patient care.

Inspired by telemedicine and developed as an emergency response to the COVID-19 pandemic, the project aims to provide daily medical and multidisciplinary visits to beds in public hospitals.

The initiative seeks not only to offer continuous support during the crisis but also to consolidate and expand the knowledge accumulated from this and other similar experiences, fostering lasting improvements in healthcare delivery.

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In addition to offering remote support, the project integrates with a collaborative platform that consolidates essential data for the Unified Health System (SUS), such as mortality rates, patient volumes, and mapping of critical areas requiring additional training.

This integration is reinforced through the use of the National Health Data Network (Rede Nacional de Dados em Saúde – RNDS), which constitutes a strategic infrastructure for health information interoperability, enabling secure, standardized, and real-time data sharing among different entities within the care network (Brazil, 2021). The platform also allows for the identification of specific regional needs, promoting a more targeted, efficient, and equitable response to gaps in care and human resources.

3 METHODOLOGY

3.1 STUDY DESIGN

This study was designed as a retrospective observational analysis, covering the period from April 2022 to December 2023. The primary objective was to evaluate the impact of multiprofessional telerounds on the implementation of individualized care plans, the achievement of therapeutic goals, and the standardized mortality rate in Intensive Care Units (ICUs) linked to the project.

3.2 POPULATION AND SAMPLE

The study population included all patients admitted to the ICUs during the study period. The sample comprised those patients who participated in the telerounds and whose information was complete within the electronic record platform. Patients without established therapeutic goals or with incomplete data were excluded.

3.3 HOSPITAL SELECTION CRITERIA

Specific criteria were established for selecting the ICUs participating in the TeleICU project under PROADI-SUS, according to regulations from Hospital Moinhos de Vento in partnership with the Ministry of Health (Brazil, 2021).

To be eligible, units had to meet the following requirements: be part of a public or philanthropic hospital serving 100% SUS patients; have between 10 and 20 beds; employ a routine physician without a specialist title in intensive care; maintain motivated medical, nursing, and multiprofessional teams willing to participate; face difficulties accessing specialists; lack established clinical-assistance protocols; have digitized imaging exams;

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possess minimum infrastructure for equipment and supplies; and have viable internet access and data network for connectivity (Brazil; Hospital Moinhos de Vento, 2021).

If the institution meets these requirements, it must submit an application by the established deadline, followed by a feasibility questionnaire and selection meetings with the project coordination and the Ministry of Health (Brazil; Hospital Moinhos de Vento, 2021).

Regarding patient selection, no formal public criteria for individual selection were identified. Participation is aimed at providing comprehensive care to all eligible ICUs, meaning that all patients admitted to the included units automatically benefit from teleconsultations and scheduled multiprofessional discussions.

3.4 DATA COLLECTION PROCEDURES

Data were collected monthly using an electronic system that recorded detailed information about patients and the achievement of goals established during the telerounds.

Telerounds, or remote clinical rounds, consist of systematic discussions of clinical cases conducted by multiprofessional teams through synchronous communication technologies, fostering knowledge exchange, decision-making support, and quality improvement in care (Saúde Digital Brasil, 2023).

According to Lopes et al. (2020), telerounds represent an effective strategy to expand access to specialized medical expertise in real-time, especially in regions with a shortage of intensive care specialists. Within the scope of the project, telerounds were conducted by a minimum multiprofessional team composed of an intensivist physician, physiotherapist, and nurse, with the participation of specialists according to case complexity.

After discussing each patient, specific therapeutic goals were defined and recorded in the digital platform, generating a care goals report. This document was made available to the local ICU teams, enabling monitoring and reassessment of care objectives on the following day.

Regarding mortality data, these were collected monthly throughout the period from April 2022 to December 2023, covering 21 months of observation. Data collection was systematically performed in the Intensive Care Units (ICUs), focusing on patient mortality rates, calculated by dividing the total number of deaths in the ICU during each month by the total number of patients treated in the unit during the same period.

These data were stored in a database, allowing for monthly monitoring and temporal analysis of variations in mortality rates.

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4 RESULTS

4.1 PROPORTION OF TELEVISITS RELATIVE TO HOSPITALIZED PATIENTS

The analysis of data regarding the proportion of televisits relative to patients admitted to the ICUs participating in the project from April 2022 to December 2023 reveals a clear progression in the adoption and utilization of this practice (see Graph 01).

Initially, in April 2022, the number of televisits was quite low, with only 11 records. This limited number can be attributed to the early implementation stage of the telerounds and the gradual adaptation of healthcare teams to the new telemedicine routines.

This scenario reinforces Harari's (2015) perspective, which anticipates the adaptation of the medical office into a dynamic and interactive virtual environment through the use of appropriate technologies, highlighting the growing acceptance of remote medical consultations due to their low cost and accessibility.

In the subsequent months, a significant increase in televisits was observed, with 468 records in May and 894 in June 2022. This rapid growth can be interpreted as a reflection of increasing engagement by the teams as they became more familiar with the new tool and recognized the value of televisits in monitoring critically ill patients.

The practice of telerounds, systematic discussions of clinical cases by multiprofessional teams via communication Technologies, was crucial in this process. As noted by Lopes et al. (2020), telerounds represent an effective strategy to expand access to specialized medical expertise in real time, particularly in regions with shortages of intensive care professionals.

From July 2022 onward, the number of televisits continued to rise steadily, reaching a peak of 2,196 in March 2023. This period of accelerated growth suggests that teleround practices and the use of telemedicine had become consolidated as essential components of ICU care, enabling a more coordinated and efficient approach.

Following the peak in March 2023, there was a slight decline in the number of televisits, stabilizing at still elevated levels. In April 2023, 2,001 visits were recorded, and although fluctuations occurred in subsequent months, televisit practices remained robust, indicating strong adherence by the teams. In December 2023, a notable decrease of approximately 47% compared to the peak was observed, yet the numbers remained higher than at the study's outset.

This pattern of growth, peak, and subsequent stabilization may indicate that after an initial phase of adoption and adaptation, televisits became an established routine, eventually

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reaching a saturation point. The recent decline in televisits may be linked to various factors, such as changing patient needs, operational adjustments within ICUs, or increased care efficiency reducing the frequency of required televisits.

Overall, the data analysis demonstrates that televisits have become an essential strategy within the care practices of Intensive Care Units (ICUs) over the evaluated period. This modality has been systematically integrated into clinical care, showing a significant impact on the organization, monitoring, and decision-making processes for critically ill patients.

Although there was an initial increase in televisit frequency followed by stabilization, the consistently high number of visits conducted through this tool underscores its effectiveness and acceptance by healthcare teams.

The sustained use of televisits over time suggests that this practice not only optimized the monitoring of hospitalized patients but also enabled a more structured and collaborative approach between ICU professionals and remotely involved specialists.

Furthermore, it is plausible that the incorporation of this resource contributed to improvements in clinical indicators, such as reductions in mortality rates and length of hospital stay, although such impacts should be assessed in conjunction with other clinical and operational variables.

The integration of technology into direct care through televisits represents a significant advancement in the quality of healthcare delivery and reinforces the potential of telehealth as a strategic tool in strengthening the SUS.

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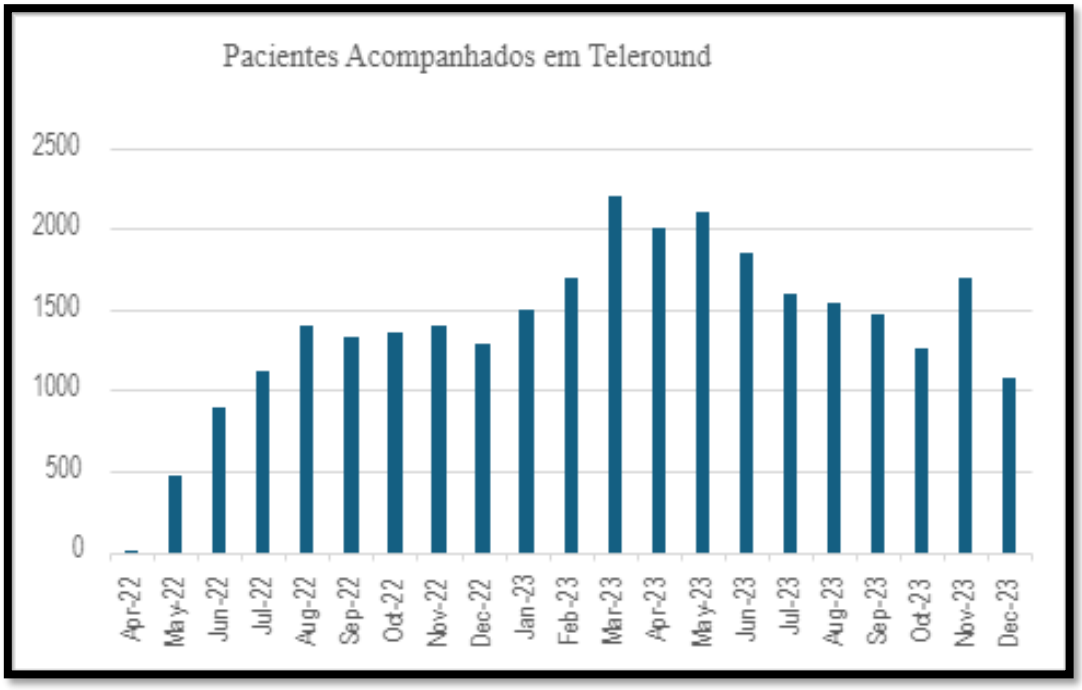
Graph 01

Patients Monitored through Telerounds.



Source: Authors' elaboration (2024).

This optimization of inpatient monitoring and the more structured, collaborative approach between healthcare professionals and remote specialists, as observed in the project, reflects telemedicine's capacity to provide medical care with rapid diagnostics and treatments. This aligns with Hallem et al. (2021), who highlight telemedicine as an effective response to gaps in healthcare delivery.

4.2 MORTALITY RATE

The comparative analysis of mortality rates in the Intensive Care Unit (ICU) from April 2022 to December 2023 reveals significant fluctuations over the months, highlighting the importance of continuous monitoring of these indicators to enhance the quality of intensive care. The monthly mortality rates, expressed as percentages, represent the proportion of deaths relative to the total number of patients admitted to the unit and are graphically illustrated in Graph 02.

During the analyzed period, mortality rates ranged from 27.35% to 37.44%, reflecting periods of heightened clinical severity or increased care burden. Three notable peaks stand out within this range: July 2022 (34.87%), January 2023 (36.00%), and August 2023

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(37.44%). These peaks may be associated with seasonal factors, variations in case complexity, or fluctuations in human resources and structural capacity within the unit.

Notably, following the increase in July 2022, mortality decreased to 31.93% in September of the same year, suggesting a possible effect of clinical interventions or operational adjustments implemented during this time. A similar pattern was observed after the peak in January 2023 (36.00%), with a gradual decline reaching 30.47% in March 2023. These fluctuations indicate that the ICU responded relatively effectively to episodic challenges, although maintaining consistent quality of care requires ongoing effort.

A particularly relevant aspect is the marked reduction in mortality rates starting in September 2023, when mortality fell from 37.44% in August to 32.25%, and further to 28.18% in November of the same year. This downward trend may be linked to improvements in clinical practices, greater adherence to care protocols, and more systematic use of tools such as the Simplified Acute Physiology Score (SAPS-3), which enables early monitoring of patient severity and guides more precise interventions.

The data presented underscore the importance of systematic and longitudinal analysis of mortality rates as a critical basis for timely decision-making. The observed downward trend in the last quarter of 2023 is a positive indicator but still requires continuous monitoring to verify the sustainability of these outcomes.

These findings corroborate those of Jacovas et al. (2021), who report that the use of technological equipment in telemedicine has shown positive results, especially in pediatrics and ICUs, contributing to a reduction in hospitalizations.

Even during months of heightened epidemiological crisis, mortality rates showed minimal variation, indicating a degree of robustness in the telemedicine-established process. This demonstrates how technological innovations, as anticipated by Toffler (1980), not only enable substantial advances in disease treatment but also redefine the structure of health systems and the very concept of medicine.

Furthermore, it is recommended that this analysis be associated with other clinical and operational indicators, such as length of stay, infection rates, and patient profiles, to deepen the understanding of the dynamics involved in ICU mortality.

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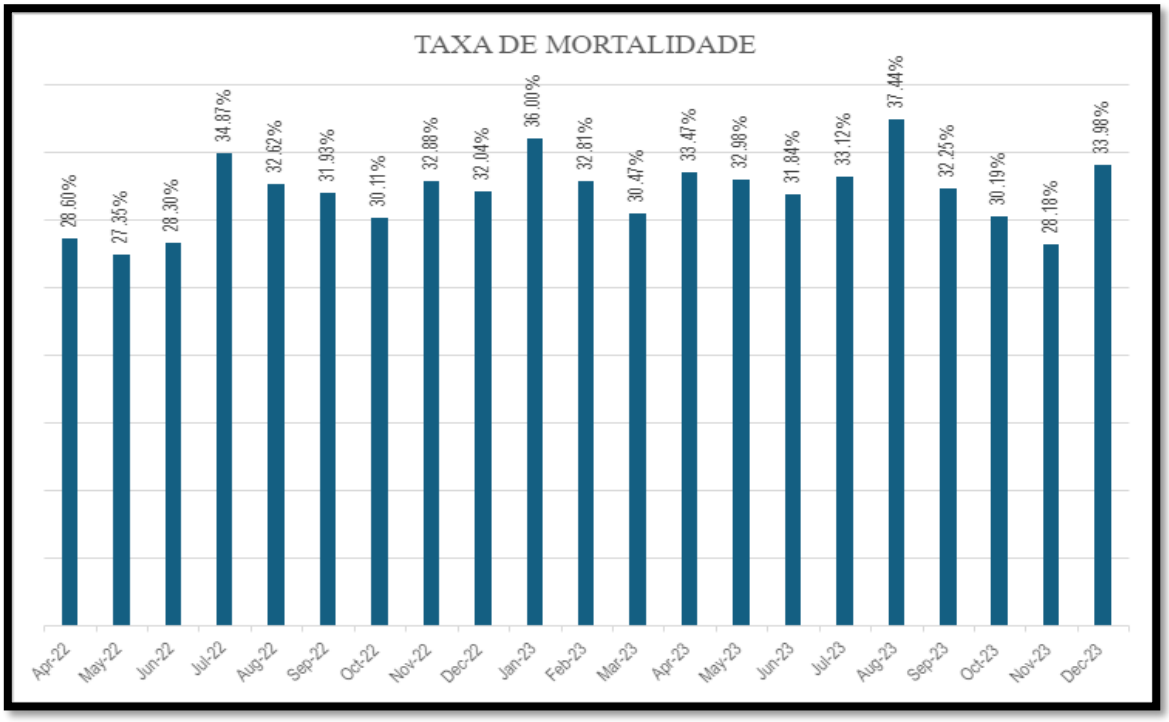
Graph 02

Mortality Rate of Monitored Patients.



Source: Authors' elaboration (2024).

In summary, the results of the TeleUTI project demonstrate that the implementation of a telemedicine care model within the SUS, focusing on telerounds and the sharing of expertise, led to a significant increase in the utilization of televisits and a reduction in the standardized mortality rate in public ICUs. These outcomes not only validate the effectiveness of telemedicine in improving access to and quality of intensive care but also reinforce the importance of digital health as a strategic tool for strengthening the SUS, fostering a more equitable and efficient healthcare system.

4.3 IMPACT ON SUS AND DIGITAL HEALTH

The successful implementation of this care model not only enhances the quality of ICU care but also drives the development of Telehealth and Digital Services within the SUS. This aligns with the perspective of Haddad and Lima (2024), who emphasize that Digital Health and its derivatives represent a tremendous potential benefit to society.

The role of PROADI-SUS, which coordinates the Ministry of Health with centers of excellence to support the institutional development of SUS, stands out as a significant public

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health innovation strategy. As noted by Mendes (2021), it facilitates the transfer of knowledge and technology to the public sector based on the expertise of participating hospitals.

Telehealth technologies, such as TeleUTI, contribute to streamlining and addressing demands within SUS as tangible and promising actions, especially considering the growing relevance of Digital Health following the creation of the Secretariat of Information and Digital Health (SEIDGI) within the Ministry of Health.

The project's success also reflects an expanded understanding of health technology, which, according to Merhy (2002), goes beyond equipment to include the modes of doing and caring, highlighting that “light technologies” (listening, welcoming, bonding) are fundamental to qualifying care. The collaborative interaction and digitally recorded care goals in TeleUTI suggest the integration of these dimensions.

Effective use of these technologies, leading to improvements in care, requires careful planning and strategies that encompass different dimensions of care, enabling the translation of scientific evidence into concrete practices, as pointed out by Catapan et al. (2024). The dependence on the interaction among various stakeholders (patients, professionals, managers) for adherence and acceptability of technologies was also demonstrated by the evolution and consolidation of televisits.

In summary, the results of the TeleUTI project demonstrate that the implementation of a telemedicine care model within SUS, focusing on telerounds and expertise sharing, resulted in a significant increase in televisit utilization and a reduction in the standardized mortality rate in public ICUs. These outcomes not only validate telemedicine’s effectiveness in improving access to and quality of intensive care but also consolidate the importance of digital health as a strategic tool to strengthen SUS, promoting a more equitable and efficient healthcare system.

5 FINAL CONSIDERATIONS

The results demonstrate a significant increase in the number of tele-rounds over the study period, reflecting the effectiveness of implementing the telemedicine care model. Data analysis revealed a continuous growth trend in tele-rounds, highlighting the successful integration of technology into the daily routines of ICUs and the adaptation of healthcare teams to this new approach.

Starting in April 2022, the progressive adoption of tele-rounds culminated in a peak of 2,196 tele-visits in March 2023, followed by stabilization at consistently high levels.

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Beyond tele-rounds, the analysis of the standardized mortality rate provides valuable insights into the project's impact. The standardized mortality rate, which compares observed mortality with expected mortality, showed a downward trend throughout the study period. This reduction, from 1.41 in April 2022 to 1.13 in December 2023, suggests a significant improvement in ICU performance. It is important to note that a standardized mortality rate below 1 indicates that observed mortality was lower than expected, which can be partly attributed to the effective implementation of telemedicine practices and consequent improvements in intensive care.

Among the study's limitations, it is important to consider the natural trend of decreasing COVID-19 mortality over time—except during pandemic peaks, which naturally increased death rates. However, this work demonstrates that even during periods of greater epidemiological crisis, mortality rates showed minimal variation compared to other months, indicating robustness in the established care process.

The positive impact of telemedicine, evidenced by the increase in tele-rounds and the reduction in the standardized mortality rate, underscores the importance of continued investment in digital health technologies.

The successful implementation of this care model not only contributes to improved quality of care in ICUs but also advances the development of Telehealth and Digital Services within the Brazilian Unified Health System (SUS), further strengthening the role of PROADI-SUS as a key agent supporting institutional development in the public health sector.

These advancements promote a more equitable and efficient health system, delivering high-quality care and improving clinical outcomes for critically ill patients.

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