Telehealth in the Jequitinhonha Valley

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Abstract

Objective: *To describe and analyze telehealth services in the Jequitinhonha Valley.* ***Methods:*** *This is a retrospective and descriptive study with a quantitative approach. The documentary records of the Telehealth Center, which is based on the Mobile Digital Health Project, were analyzed from January 2023 to October 2024.* ***Results:*** *The Mobile Digital Health Project was approved in 2022; however, teleconsultations and telediagnoses began in 2023. The exams are performed in two mobile structures of the university and sent to the centers of the Federal University of Minas Gerais and the Federal University of Goiás, for the issuance of reports. Thus, since its implementation, 8,315 services have been performed: 2,909 electrocardiogram telediagnoses; 2,531 retinography telediagnoses, 1,074 dermatology teleconsultations, 507 oral cancer screenings and 1,274 oral imaging exams in 20 municipalities. In total, 89 training sessions were carried out.* ***Conclusions:*** *The telehealth services promoted by the Mobile Digital Health Project and the UFVJM Telehealth Center have provided easy access to health services, screening for diseases and conditions, reduced waiting times for consultations and exams in the specialties covered by municipal regulations, financial savings for health departments and resolution of treatments.*

Keywords: *Telehealth, Telemedicine, Mobile Health, Unified Health System.*

Resumen

Telesalud en el Valle de Jequitinhonha

Objetivo: *Describir y analizar los servicios de telesalud en Vale Jequitinhonha.* ***Métodos:*** *se trata de un estudio retrospectivo, descriptivo, con enfoque cuantitativo. Se analizaron los registros documentales del Centro de Telesalud, que tiene como base el Proyecto Salud Digital Móvil, desde enero de 2023 a octubre de 2024.* ***Resultados:*** *El Proyecto Salud Digital Móvil fue aprobado en 2022, sin embargo, las Teleconsultas y Telediagnóstico comenzaron en 2023. Los exámenes se realizan en dos estructuras móviles de la universidad y se envían a los centros de la Universidad Federal de Minas Gerais y la Universidad Federal de Goiás, para emitir los informes. Así, desde su implementación se han realizado 8.315 consultas, entre ellas: 2.909 telediagnóstico de electrocardiograma; 2531 telediagnósticos de retinografía, 1074 teleconsultas de dermatología, 507 exámenes de detección de cáncer bucal y 1274 exámenes de imagen bucal, en 20 municipios. Se realizaron 89 sesiones de formación.* ***Conclusiones:*** *Los servicios de Telesalud promovidos por el Proyecto Salud Digital Móvil y el Centro de Telesalud de la UFVJM han brindado facilidad de acceso a servicios de salud, detección de enfermedades y dolencias, reducción de filas para consultas y exámenes de especialidades cubiertas por la normativa municipal, ahorro financiero para las secretarías de salud y resoluciones de tratamiento.*

Palabras-clave: *Telesalud, Telemedicina, Salud Móvil, Sistema Único de Salud.*

Resumo

Telessaúde no Vale Jequitinhonha

Objetivo: *Descrever e analisar os atendimentos de telessaúde no Vale Jequitinhonha.* ***Métodos:*** *trata-se de um estudo retrospectivo e descritivo, com abordagem quantitativa. Foram analisados os registros documentais do Núcleo de Telessaúde, que tem como base o Projeto Saúde Digital Móvel, no período de janeiro de 2023 a outubro de 2024.* ***Resultados:*** *O Projeto Saúde Digital Móvel teve sua aprovação em 2022, no entanto, as teleconsultas e telediagnósticos iniciaram em 2023. Os exames são realizados em duas estruturas móveis da universidade e encaminhados para os polos da Universidade Federal de Minas Gerais e Universidade Federal de Goiás, para emissão dos laudos. Dessa forma, desde sua implantação, já foram realizados 8315 atendimentos, sendo deles: 2909 telediagnósticos de eletrocardiograma; 2531 telediagnósticos de retinografia, 1074 teleconsultorias em dermatologia, 507 rastreios de câncer bucal e 1274 exames de imagem bucal, em 20 municípios. Foram realizadas 89 capacitações.* ***Conclusões:*** *Os atendimentos de telessaúde promovidos pelo Projeto Saúde Digital Móvel e o Núcleo de Telessaúde da UFVJM tem proporcionado a facilidade de acesso aos serviços de saúde, rastreio de doenças e agravos, redução de filas para consultas e exames das especialidades atendidas nas regulações municipais, economias financeiras para as secretarias de saúde e resolutividades nos tratamentos.*

Palavras-chave: *Telessaúde, Telemedicina, Saúde Móvel, Sistema Único de Saúde.*

INTRODUCTION

The National Telehealth Brazil Networks Program (*Telessaúde Brasil Redes*) was established by the Ministry of Health in 2011, to improve access to health services, and the quality of care and reduce the number of referrals in institutions of the Unified Health System (SUS-*Sistema Único de Saúde*). In addition, the program also aims to promote the continuing education of health professionals, through training, courses, and tele-education.[1]

The telehealth program provides teleconsultation services (synchronous and asynchronous), telediagnosis, second formative opinion, and teleeducation. For the program to function, it is made up of Technical-Scientific Telehealth Centers and Telehealth Points, which are the health services from which demands are listed.[1] Brazil currently has telehealth centers in 23 states of the federation, the state of Minas Gerais being one of them.[2]

Since the COVID-19 pandemic in 2020, the digitalization process has been boosted, demonstrating the importance of incorporating new technologies into health systems and disseminating the concept of digital health in several countries. The use of digital health is useful for improving health at the collective level, populations, through public health interventions, and at the individual level to guide clinical actions, including promotion, prevention, rehabilitation, and palliative care.[3]

Thus, telehealth centers in Brazil have become essential for promoting health and strengthening the Unified Health System (SUS). These initiatives integrate technology and health to offer care services to the population, especially in regions lacking medical resources. Given that, in a country like Brazil, with a continental geographic dimension, most of the high and medium-complexity health resources are concentrated in large urban centers, while most communities lack adequate medical care in primary care and have difficulty accessing specialists and diagnostic tests.[4] Through faster care and with detailed records of patients in remote locations, telehealth services come through the centers, facilitating simultaneous and multidisciplinary communication, since specialized software and digital imaging diagnostic services have become available.[4,5]

According to the Ministry of Health, telediagnosis is an autonomous service that uses information and communication technologies to provide diagnostic support services across geographic and temporal distances. Teleconsultation is a registered consultation

carried out between workers, professionals, and managers in the health area, through two-way telecommunication instruments, to clarify doubts about clinical procedures, health actions and issues related to the work process.[1]

The Ministry of Health defines tele-education as conferences, classes, and courses taught through the use of information and communication technologies.[1]

Given this, the Federal University of the Jequitinhonha and Mucuri Valleys (UFVJM), starting in 2023, through the Mobile Digital Health Project, began to carry out telehealth actions such as teleconsultations, telediagnosis, and training in the Jequitinhonha Valley. This is an unprecedented extension project in Brazil, due to its mobility nature, going to the municipalities requesting the services. This project is approved by the Digital Health Department - DESD, linked to the extension program, "University in Communities" of the Pro-Rectory of Extension and Culture (PROEXC-*Pró-Reitoria de Extensão e Cultura*).

With the development of the actions of the Mobile Digital Health Project, the implementation of the UFVJM Telehealth Center was essential, which began in January 2024, with professionals from the Department of Nursing, School of Medicine, Department of Dentistry, and professionals from the Mobile Digital Health Project being supported by the Santa Catarina Telehealth Center, Goiás Telehealth Center and the Telehealth Center of the Federal University of Minas Gerais.

OBJECTIVE

To describe and analyze Telehealth services in the Jequitinhonha Valley, through the mobile digital health project

METHOD

This is a retrospective, descriptive study, with a quantitative approach, in which the documentary records of telediagnosis, teleconsultations, and training of the UFVJM Telehealth Center were analyzed, based on the Mobile Digital Health Project.

The inclusion criteria were data from examinations produced between 2023 and 2024 in the areas of cardiology, ophthalmology, dermatology, radiology, and dentistry.

When analyzing the data from telediagnosis and teleconsultations, the following information was extracted: place of origin, month of service, type of teleconsultation or telediagnosis, and procedures performed.

Regarding training, the questions were about the type of training and period.

After the data collection, the data were stored and tabulated using Microsoft Office Excel 2013 software, from which the frequency analysis of the categorical variables and descriptive analysis of the quantitative variables were performed.

Throughout the research, the ethical aspects established by Resolution 466/12 of the National Health Council for research involving human beings were respected. The study was approved by the UFVJM Telehealth Center and the UFVJM Research Ethics Committee under number 6,864,383 dated June 4, 2024.

RESULTS AND DISCUSSION

To describe and analyze Telehealth services in the Jequitinhonha Valley, it is necessary to describe the Mobile Digital Health Project. It is an unprecedented extension project in Brazilian territory, due to its mobility nature, going to the municipalities requesting telehealth services, to carry out exams, training, and teleconsultations.[6]

The aforementioned program is an institutional extension action coordinated by the PROEXC/UFVJM team, which aims to interact between the university and communities and promote social impact and transformation in its area of coverage. Such interaction and transformation occur in a practical and participatory manner, with the perspective of promoting the circularity of knowledge materialized in extension, which expresses the contemporary dialogue of academic knowledge with the knowledge and needs of municipalities, cities, neighborhoods, districts, and population groups in both urban and rural areas[7].

The project seeks to meet the needs of the UFVJM coverage area, through telehealth to provide the less favored population with access to essential exams for monitoring chronic pathologies and early diagnosis of oral and dermatological lesions, without the need to travel to urban centers and wait in lines for municipal regulations.

For a municipality to be included in the Mobile Digital Health project, it must send an email to the UFVJM Office of the Vice-Rector for Extension requesting the service. The municipality is contacted to schedule a meeting and sign an agreement, supported by the General Data Protection Law (LGPD)[6]. During the meeting, the entire organizational structure required for the development of the project is explained, in addition to learning about the local reality and the need for exams, care, and training. The actions are organized considering the peculiarities of the services.

The project was approved in 2022, but its telediagnosis actions in retinography, skin cancer screening, and electrocardiogram began in 2023 through the rental of devices. The project is a response to the difficulties in accessing health care faced by many people living in rural areas or small cities with limited healthcare networks, as well as health professionals who have difficulty going out to receive training. UFVJM, recognizing this need, mobilized a multidisciplinary team of health, information technology and education professionals to develop the Mobile Digital Health.

One of the goals of telehealth in Brazil is to improve the quality of primary health care (PHC), with primary health care professionals being its main users. A prerequisite for telehealth practices is the existence of adequate infrastructure, with quality equipment and logical network connections. The advances provided by initiatives such as *Requalifica UBS*, the *Telessaúde Brasil Redes* Program, and E-SUS Primary Care were not enough to correct regional inequalities. By the early 2020s, less than 10% of Brazilian Primary Health Care Units (UBS-*Unidades Básicas de Saúde*) had sufficient infrastructure to make a video call[8] and less than 30% had an institutional cell phone.[9]

Considering the lack of resources in the municipalities covered, the project involves the use of two mobile health units (trucks) that travel to previously

mapped communities, where teleconsultations, telediagnoses, training, and courses are carried out (Figure 1).

**Figure-1**- Image of the truck used in the Digital Health Project

One of the trucks has currently been loaned to the Municipal Secretariat of Porto Alegre to assist flood victims, a partnership between UFVJM and the Federal University of Health Sciences of Porto Alegre.

The project's goals in relation to telediagnosis and teleconsultations are 100 electrocardiogram exams; 50 teleconsultations for skin cancer screening and 50 retinography exams.

Based on this project, the Ministry of Health requested the creation of the UFVJM Telehealth Center in 2024. Based on this achievement, the project will be registered in the National Registry of Health Establishments.

Telehealth services took place in 20 municipalities in the interior of Minas Gerais, from January 2023 to October 2024. There were 5,440 telediagnoses, 1,074 dermatology teleconsultations, 507 oral cancer screenings, and 1,274 oral X-rays (Figure.2)

Figure 2 - Distribution of telediagnosis and teleconsultation procedures of the Digital Health Project by month and year of care in the period from 2023 to 2024.
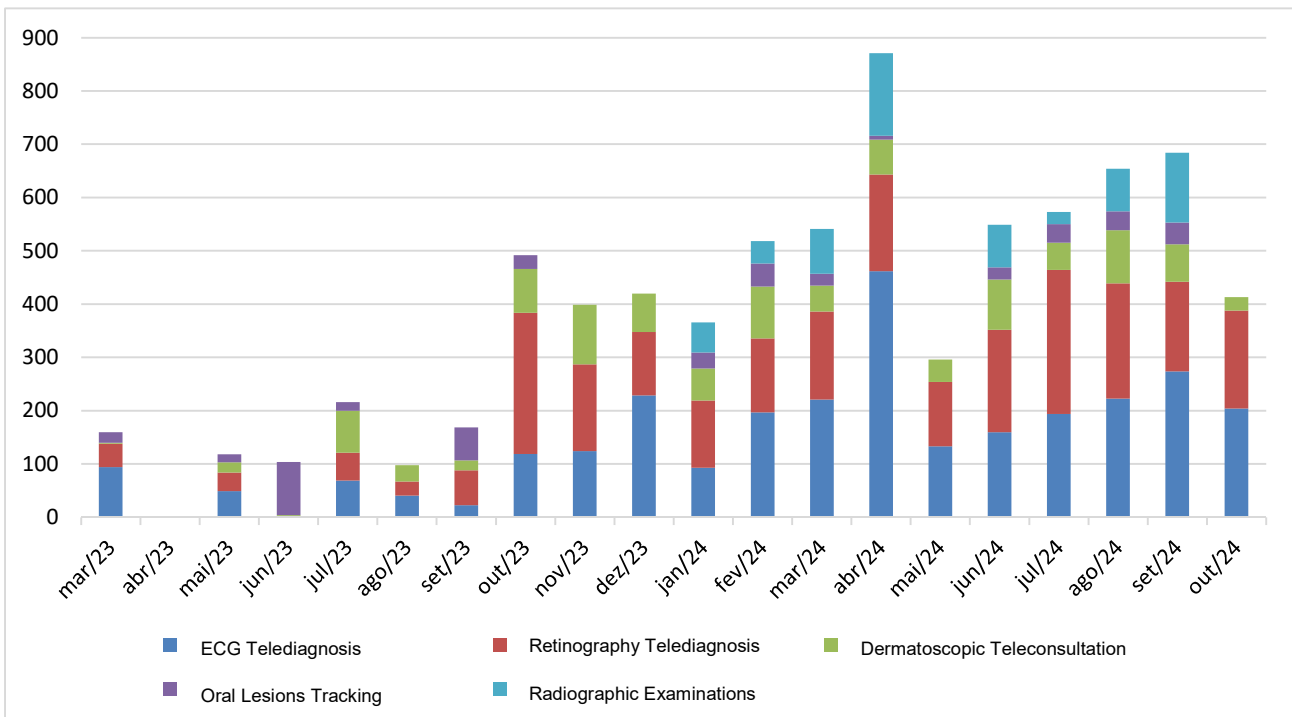
Source: Digital Health Project Archives, 2024.

Therefore, the experience in Telehealth in the Jequitinhonha Valley was marked by the healthcare area, focused on accessibility to diagnostic exams and training. The idea of the Center arose to support municipalities and primary health care services in resolving cases and integrating with the University, through digital technologies.

Digital technologies expanded access to health services[10,11] and can offer care to people living in hard-to-reach places, rural or remote areas[11], a very significant milestone for comprehensive health care for the population.[12,13]

The importance of UFVJM's Mobile Digital Health is immense. It not only provides access to essential health services to communities that would otherwise be neglected but also promotes digital inclusion by training health professionals and community members in the use of digital technologies for health care. In addition, the project contributes to the education of health students, providing them with practical experience in providing care to diverse populations and in challenging contexts. Students receive a certificate for each action and can count these hours towards their extension curriculum. Ultimately, UFVJM's Mobile Digital Health represents an inspiring example of how technological innovation can be used to promote the health and well-being of communities and promote professional qualification through Tele-education.

Tele-education in health has emerged as an essential tool for training and updating health professionals, especially in regions with limited access to in-person educational resources and infrastructure. Studies indicate that this can significantly improve access to education for professionals in rural or low-income areas, promoting flexible and accessible learning that contributes to the quality of patient care.

In the UFVJM Digital Health Project, courses and classes for health professionals and lay people are continuously held virtually and in person. Regarding professional training, the goal is to train professionals from Basic Health Units in the region's municipalities, UFVJM professors and students, health professionals, and also teachers from the basic education network. The project's goal is to offer 20 courses, 40 web classes/lectures, and 40 web seminars in 24 months.

From January 2023 to October 2024, 89 continuing education actions in health were carried out. Of these, 37 were web-based training courses (online) and 52 were hybrid training courses (in-person and online). The topics covered were developed by professionals in nursing, dentistry, and medicine.

Table 1- Topics addressed in Tele-education actions in the Jequitinhonha Valley, 2024

Topics	Quantity
Telehealth Qualification	38
Oral Health Care	31
Wounds	10
First Aid	9
Hansen's disease	1
Total	89

Source: Mobile Digital Health Project Archive

The First Aid course has been offered to teachers in public and private schools. Municipalities have made this request following Law 13,722, which makes training in basic first aid mandatory for teachers and employees of public and private schools and children's recreation facilities.[14]

According to Brito[15], the importance of this type of training course is given that situations that require first aid are common in schools, especially in early childhood education, and the lack of knowledge about initial care can cause several problems, such as failure to provide assistance and inadequate handling of the victim, which can aggravate the situation or generate unnecessary calls to the emergency services.

In addition to first aid training, another important training is for health professionals in wounds and pressure injury prevention. Studies have indicated a lack of knowledge among health teams on the subject of Pressure Injuries (PIs), making training for

health professionals vital to achieving excellence in care aimed at preventing, assessing, and classifying injuries.[16]

Regarding oral care training, the project's educational actions aim to help meet demands identified by the community through individual and collective dental care with actions in primary care.

CONCLUSION

The Mobile Digital Health Project, developed by the Telehealth Center of the Federal University of the Jequitinhonha and Mucuri Valleys, is an important advance for health in the region, especially in specialized care. It provides the population of the Jequitinhonha and Mucuri Valley with easy access to health services, disease, and injury screening, reduces waiting times for consultations and exams in the

specialties served, assists municipal regulatory services, saves money for health departments, and improves treatment outcomes in the municipalities.

The center's future goal is to implement a fixed service point on the UFVJM campus for telediagnosis and teleconsultation, in addition to expanding the exams offered, such as spirometry.

Further assessments of the center's impact on the region are still needed, in addition to the prevalence of exams with alterations; however, through these results presented in this chapter, it can already be concluded that the center has contributed to the region's health services and professional training.

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