

The Digital Health Era: the need for telepharmacy in Brazil and aspects of social and economic impacts

Johnny Francisco da Silva	Faculdade de Ciências Farmacêuticas, Universidade de São Paulo, São Paulo 05508-000, Brasil. E-mail: johnny.ifs83@gmail.com
Maria Aparecida Nicoletti	Faculdade de Ciências Farmacêuticas, Universidade de São Paulo, São Paulo 05508-000, Brasil. E-mail: nicoletti@usp.br
André Rinaldi Fukushima	Universidade de São Paulo, Faculdade Medicina Veterinária e Zootecnia, Departamento de Patologia, Programa de Pós-Graduação em Patologia Experimental e Comparada, São Paulo – SP, Brasil; Centro Universitário das Américas, São Paulo – SP, Brasil; Faculdade de Ciências da Saúde do IGESP, São Paulo – SP, Brasil. E-mail: fukushima@alumni.usp.br

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Abstract

Introduction: Faced with the growth of digital health, telepharmacy has emerged as an alternative to overcome obstacles to patient care and monitoring and stands out in relation to the traditional pharmacy model, as it offers greater access to services, a higher level of patient satisfaction, and lower costs. It is estimated that telepharmacy will create spaces for advice, discussions, and analyses concerning health matters, allowing for better communication with patients or at least a better understanding of their needs in relation to their health and treatments. **Objective:** To highlight the need for the implementation and evolution of telepharmacy in Brazil, to evaluate telepharmacy during COVID-19, and to observe models of use in other countries. **Methods:** A bibliographical review was carried out on the topic based on information obtained from the Google Scholar, SciELO, PubMed, Web of Science, and Science Direct databases, with a selection of articles published between 2012 and 2022. **Conclusion:** The Federal Council of Pharmacy took an important step towards the implementation of telepharmacy; however, Brazil does not yet have a defined plan for telepharmacy aimed at public health. Hence, this review makes it possible to better understand the importance of telehealth when facing a pandemic and allows us to ask if the difficulties faced by the country during COVID-19 might have been less impacting if a well-established telehealth scenario had been in place. It will be up to the government to create the scenario for the evolution of telepharmacy and up to the universities to prepare future professionals for the digital era in some pharmaceutical care services that can be carried out remotely.

Key-words: Digital health; Telepharmacy; Healthcare

Resumen

La era digital de la salud: la necesidad de la telefarmacia en Brasil y el impacto social y económico.

Introducción: Frente al crecimiento de la salud digital, la telefarmacia ha surgido como una alternativa para superar los obstáculos en la atención y seguimiento del paciente, destacándose en relación con el modelo tradicional de farmacia por ofrecer un mayor acceso al servicio, un mayor índice de satisfacción del paciente y costos más bajos. Se estima que la telefarmacia creará espacios de orientación, discusión y análisis de salud, permitiendo una mejor comunicación con los pacientes o una mejor comprensión de sus necesidades en relación con su salud y tratamientos. **Objetivo:** Resaltar la necesidad de implementar y evolucionar la telefarmacia en Brasil, evaluar la telefarmacia durante el COVID-19 y observar modelos de uso en otros países. **Método:** Se realizó una revisión de la literatura sobre el tema a partir de información obtenida de las bases de datos Google Scholar, SciELO, PubMed, Web of Science y Science Direct, con una selección de artículos publicados entre 2012 y 2022. **Conclusión:** El Consejo Federal de Farmacia dio un paso importante hacia la implementación de la telefarmacia, pero Brasil aún no tiene un plan definido de telefarmacia dirigido a la salud pública, la revisión permite percibir la importancia de la telesalud durante el enfrentamiento de una pandemia y permite preguntarse si las dificultades que enfrenta el país durante la COVID-19 no serían menores ante un escenario ya establecido de telesalud. Corresponderá al gobierno hacer posible el escenario para la evolución de la telefarmacia y a las universidades, preparar a los futuros profesionales para la era digital en algunos servicios de atención farmacéutica que se puedan realizar a distancia.

Palabras-clave: Salud digital; Telefarmacia; Atención a salud.

A Era Digital da Saúde: a necessidade da telefarmácia no Brasil e aspectos do impacto social e econômico.

Introdução: Diante do crescimento da saúde digital, a telefarmácia surgiu como uma alternativa para superar obstáculos ao atendimento e acompanhamento dos pacientes, destacando-se em relação ao modelo tradicional de farmácia por apresentar um maior acesso ao serviço, um maior índice de satisfação dos pacientes e custos mais baixos. Estima-se que a telefarmácia criará espaços de orientação em saúde, discussão e análise de saúde, permitindo uma melhor comunicação com os pacientes ou melhor compreensão de suas necessidades em relação à sua saúde e tratamentos. **Objetivo:** Evidenciar a necessidade de implantação e evolução da telefarmácia no Brasil, avaliar a telefarmácia durante a COVID-19 e observar modelos de uso em outros países. **Método:** Foi realizada uma revisão bibliográfica sobre o tema a partir de informações obtidas nas bases de dados Google Scholar, SciELO, PubMed, Web of Science e Science Direct, com seleção de artigos publicados entre 2012 e 2022. **Conclusão:** O Conselho Federal de Farmácia deu um passo importante para a implementação da telefarmácia, porém o Brasil ainda não possui um plano definido para a telefarmácia voltada para a saúde pública, a revisão torna possível perceber a importância da telefarmácia durante o enfrentamento de uma pandemia e permite indagar se as dificuldades enfrentadas pelo País durante a COVID-19, não seriam menores diante de um cenário já estabelecido de telefarmácia. Caberá ao governo tornar possível o cenário para a evolução da telefarmácia e às universidades, preparar os futuros profissionais para a era digital em alguns serviços de cuidado farmacêutico que poderão ser realizados a distância.

Palavras-chave: Saúde digital; Telefarmácia; Atenção à saúde

INTRODUCTION

The World Health Organization (WHO) began to draft the Global Digital Health Strategy in 2019, driven by the growing advancement and popularization of the “digital world”. Countries such as Canada, Australia, the United States, England, Scotland, Denmark, and Sweden have systematically invested in infrastructure, systems, services, and human resources to make digital health an essential part of everyday life and a key strategy to improve it¹. The term “digital health” is used by the WHO to refer to the multidisciplinary use of digital technologies applied to health, and has greatly expanded its use through new technologies and new forms of interaction with patients around the world².

With the regulation and expansion of telemedicine in Brazil as a result of the COVID-19 pandemic, it is expected that new fronts of digital health will gain space, as is the case of telepharmacy, widely used in some countries, like Spain, which considers telepharmacy a useful and necessary tool for specialized pharmaceutical care focused on the clinical monitoring of patients^{3,4}. Telepharmacy, like several health technologies, has emerged as a potential alternative to overcome obstacles to medical care and the clinical monitoring of patients. This technology aims, in a unique and innovative way, to provide quality pharmaceutical services, mainly, but not solely, in rural areas and in the outskirts of major cities.

Telepharmacy has also been prominent in solving problems associated with medication management. A pharmacist who can virtually interact with a prescriber in a real-time environment allows the pharmacist to be efficient and serve multiple locations in a short space of time. It also allows the pharmacist to focus on drug therapy issues or answer questions the physician may have about prescribing factors and other topics that would benefit from the pharmacist’s input⁵.

Given the growth of digital health around the world and the problems faced by Brazil, with regard to public health, this work carried out a narrative literature review on telepharmacy, analyzing the current situation in Brazil, exploring the relationship between telepharmacy and COVID-19, the application of technology in other countries, and the impact on pharmacist training. Therefore, this review aimed to highlight the need for the implementation and evolution of telepharmacy in Brazil, as a public health tool; to evaluate the telepharmacy scenario during COVID-19; and to observe countries that have already structured its use.

METHOD

A narrative literature review was conducted on the proposed topic, using the following databases: Google Scholar, Scientific Electronic Library Online (SciELO), US National Library of Medicine - National Institutes of Health (PubMed), Web of Science, and Science Direct, as well as the websites of national, international, public, and private institutions.

As inclusion criteria, articles and/or studies and/or documents published over a period of the last 10 years in Portuguese (Brazil and Portugal), English and Spanish were used. Therefore, those whose publication date did not meet the established period and/or the proposed languages were discarded unless publications prior to the established period contributed to providing a better and more comprehensive understanding of the scenario.

Once the aforementioned inclusion criteria had been met, the publications were first analyzed by reading their respective title and abstract. If its content proved to be relevant to the study and could make significant contributions to the discussion of the topic, then the article was read in full.

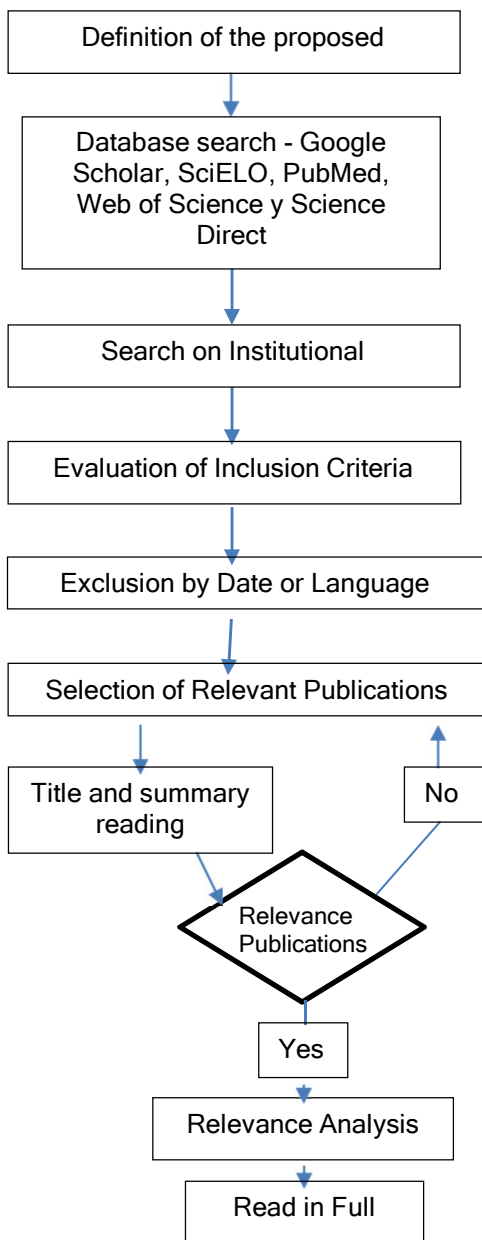
The flowchart below presents the decision-making algorithm used for material selection.

RESULTS AND DISCUSSION

Situational analysis of digital health and telepharmacy in Brazil

Resolution 727/22, of the Federal Council of Pharmacy (CFF, in Portuguese), was published on July 20th, in the Official Gazette of the Union (Diário Oficial da União — DOU), which regulates the practice of telepharmacy in the country, an important step for the scenario of digital health. With the new resolution, it is now up to pharmacists to provide digital pharmaceutical services directly to the patient, the family, and the community,

Decision-making flowchart



Source: own author

whether collectively or individually, such as health tracking, health education, the management of self-limited health problems, Therapeutic Drug Monitoring, medication reconciliation, pharmacotherapy review, health condition management, and pharmacotherapeutic monitoring, as well as other attributions that can be regulated¹⁰.

Telepharmacy is seen around the world as an extension of clinical pharmacy, providing pharmaceutical services through digital means. The concept is a natural development in the face of the demands of new social and economic contexts and, mainly, a result of the Health 4.0 model, or Digital Health, which was accelerated in Brazil due to the COVID-19 pandemic. The country, which has continental dimensions, used telemedicine as a vital ally to reach the outskirts of major cities during the global health emergency.

Much like telemedicine, telepharmacy is one of the sectors of telehealth that uses a digital means to provide care remotely. Moreover, in the pharmaceutical sector, in addition to being a tool for dialogue, telepharmacy also provides aid in achieving pharmacotherapeutic adherence, as well as patient education and even support provided to other pharmacists. Prior studies have already demonstrated the benefits of this service format in achieving adherence to treatment and improvements in the health of chronic patients¹¹.

Accessibility, equity, and optimization of the work of professionals to bring better health to the population are objectives that form the basis of these digital transformation initiatives. Telepharmacy, however, does not replace the legal requirement for the responsible pharmacist to be present in the pharmacy throughout its period of operation. Legally, there is no incompatibility between pharmaceutical care and telepharmacy, especially if it is interpreted as simply another form of health promotion¹⁰.

To formulate the text of the new regulation¹⁰, the CFF, in Article 2, claims that “telepharmacy is understood as the exercise of Clinical Pharmacy by means of Information and Communication Technology (ICT), remotely, in real time (synchronous) or asynchronous, for the purposes of health promotion, protection, monitoring, and recovery; the prevention of diseases and other health problems; as well as to solve pharmacotherapy problems, so as to achieve the rational use of medicines and other technologies in health. Telepharmacy can also be used for teaching and research in health.”

Furthermore, according to the resolution, telepharmacy can be carried out in the following service modalities:

- I) Pharmaceutical teleconsultation;
- II) Teleinterconsultation;
- III) Telemonitoring or telesurveillance;
- IV) Teleconsulting.

According to the new standard, to work in telepharmacy, pharmacists will have to use platforms or software duly registered with the Regional Council of Pharmacy (CRF, in Portuguese) of their jurisdiction and with representation established in the country. Legal entities that will provide telepharmacy platforms or software, or who perform services through pharmaceutical practice, must have due representation established in Brazil, registered with the CRF of the state where they are headquartered, and a pharmacist who is responsible for all technical issues¹⁰.

Telepharmacy is expected to grow as the population ages, transportation becomes more difficult, and the costs of traditional health care begin to rise. The practice opens the door to a new type of relationship between pharmacists and citizens. What we have is an application of telemedicine that, remotely, involves the provision of pharmaceutical care, medication management, the availability of medicines, and long distance information management, which has proven to increase access to care for patients, especially in rural areas, as well as provide improvements in continued care⁵.

With the evolution of technologies, several examples of pharmacy chains began to emerge in Brazil, such as “Drogasil”®, “Drogaria Araújo”®, and “Drogaria Panvel”®, which provide remote customer service and their own medicine delivery systems. Electronic prescription companies, such as “Mevo Saúde”® and “Memed”®, began their operations with the primary objective of replacing handwritten prescriptions with an electronically signed digital model. These companies have already expanded their operations to a fully remote end-to-end flow, where the prescribing doctor, through the company's platform, often associated with the hospital's management system, generates an electronic prescription and sends it directly to the patient's cell phone. After receiving the prescription, the patient can then access a sales platform directly from the prescription, which recognizes the medicines contained in the prescription and organizes the “shopping cart”, taking into account the prescribed pharmaceutical form, the dosage described by the doctor, and the user's preferences between a generic or reference medicine. Respecting the rules of interchangeability, and without the intervention or participation of any drugstore, telepharmacy is able to sell and deliver medicines to the patient's location of interest. To achieve this, these electronic prescription companies have begun to open their own drugstores, with the appropriate operating license, but which, in practice, do not carry out face-to-face sales, as all sales are carried out through the digital platform¹², including the sale of medicines subject to special control, in accordance with the resolution of the National Health Surveillance Agency (ANVISA) no. 357, of March 2020, which, according to Article 4, establishes that “Remote delivery defined by a specific public program is permitted, as is the home delivery of medicines subject to

special control carried out by a supplier, which must be performed by withholding the Notification of Revenue or Special Control Revenue”¹³.

More recently, the “Pague Menos”® pharmacy chain made the “Sempre Bem Saúde” (“Good Health Always”) program available to its users, a type of health plan that offers free and unlimited telemedicine, among other benefits. The basic plan includes telemedicine, with consultations with a general practitioner, psychologist, pediatrician, and nutritionist. The intermediate and family combos, in addition to the benefits mentioned above, include pharmaceutical care, 24-hour medical advice by telephone, and some free exams annually.

It can be seen that some drugstore chains in Brazil have moved when faced with the advances brought forth by telehealth, and the providing of specific services, such as telemedicine and medicine delivery, demonstrates that the group has prepared itself for the arrival of telepharmacy.

Much like telemedicine, telepharmacy presents us with a series of advantages and challenges when compared to the traditional model, such as:

- Patient satisfaction — a reliable and personalized source of information greatly improves the experience of patients with a low level of education. Many patients abandon treatment because they experience some type of side effect, or do not see the effectiveness of the treatment in the short term. Moreover, if they have difficulty to commute to and from the hospital (whether physical or economic), they tend to choose to stop taking the medication. Digital health models allow, through telemedicine and telepharmacy, the review, replacement, or renewal of medications without the patient having to leave his/her own home, in addition to clarifying their doubts regarding the effects and effectiveness⁶.

- Greater access to pharmaceutical services — in a survey carried out in the USA, half of the 410 rural hospitals had a pharmacist available for less than 5 hours per week, and in 90% of all hospitals, it was reported that nurses were responsible for dispensing and administering medicines. The telepharmacy model allows pharmacists located in central hospitals to work remotely in these sites, reviewing the use of medicines, providing medical advice and educating patients⁷. It is important to mention that greater access is directly linked to the correct use of telepharmacy, which should evaluate patients who fit this model of care.

- Lower costs — today it is possible to find several low-cost technologies that allow for private and secure telepharmacy and telemedicine consultations. Platforms, such as AmWell, Vidyo, Doctor on Demand, MDLive, among others, allow the patient to have direct contact with the doctor or pharmacist by computer, cell phone, tablet, or even landline telephone at no additional cost to the patient for access to the platform. The low cost of the technology also impacts the provider's budget, who sees this possibility as a less costly alternative than treatment

rooms, offices, employees and the like⁵.

Some of the main challenges for the adoption of telepharmacy in Brazil include:

- Culture - in Brazil, the pharmacist is still seen by most of the population as playing a purely commercial role; little is introduced into health systems concerning the pharmacist as an integral part of the multidisciplinary chain of care. Thus, it tends to be more difficult for the population in general to embrace telepharmacy as it did with telemedicine, especially for those who have less contact with technology⁸.

- Technology — despite showing great progress when compared to the past decade, Brazil still does not have complete broadband coverage with sufficient quality to hold a video conference. According to Anatel data from 2020, only 72% of Brazilian municipalities are served by fiber optics, which today is the main cable internet technology, and even with good mobile internet coverage in the country, the price paid for megabytes per second (Mbps) makes a video call of more than 30 minutes on a mobile network unfeasible for low-income populations⁹.

Telepharmacy is a tool that enables training and the transmission of detailed, true, and up-to-date information to patients. This means of communication will allow for greater dissemination and expansion of information and knowledge. Furthermore, it will facilitate development, offering online comprehensive training, which will be an opportunity to optimize time and resources for healthcare professionals. It is estimated that telepharmacy will create spaces for health communication, discussion, and analysis, enabling better communication with patients or at least a more comprehensive understanding of their needs in relation to their health and treatments. Telepharmacy will also enable the measurement of health outcomes in real time through the incorporation of technological solution tools to understand the data reported by patients about their health. This will allow us to redesign follow-up and monitoring strategies on an individual basis⁴.

The relationship of telepharmacy with COVID-19

Coronavirus, identified as SARS-CoV-2, was discovered in December 2019 in Wuhan, China. After this discovery, the virus continued to spread, and its infectious impact was witnessed throughout world. To date, according to the WHO, there have been more than 615 million confirmed cases of COVID-19 and more than 6.5 million deaths worldwide¹⁴. Initially, mitigation strategies, such as social distancing and wearing a mask, were implemented in efforts to reduce the spread of the virus. Shortly thereafter, research and development began the process to authorize the emergency use of vaccines to help protect against the virus.

However, those who had been infected with COVID-19 more frequently experienced respiratory symptoms, such as cold symptoms, cough, and shortness of breath¹⁵.

As the highly transmissible and virulent virus expanded before the vaccine's release in 2020, healthcare units began to experience an increase in the population of patients testing positive for COVID-19 and became overwhelmed by rising hospitalization rates. Elective surgeries and non-critical medical services were postponed or restricted¹⁶. Anxiety and fear were widespread, especially among those needing to seek medical care for emergencies unrelated to COVID-19. Patients avoided seeking hospital care for a long period of time due to stay-at-home orders or fear of increased contagion¹⁸.

The use of telehealth was promoted during the COVID-19 pandemic to combat this situation. Remote healthcare services during the pandemic have demonstrated benefits to the healthcare system and improved public health¹⁹. Access to telehealth services has allowed for greater social distancing and reduced potential infectious exposures. Additionally, pressure on healthcare facilities has been reduced, minimizing in-person patient demand at the facilities¹⁹.

Pharmacies were no exception to the impact of COVID-19. After the pandemic had been declared, they began making rapid changes to prioritize patient and employee safety, with major pharmacy chains suffering the economic stress caused by the pandemic. Many chains had to reduce staff, offer lower pay, or even close stores. Furthermore, the pandemic affected medication supplies, making it difficult for some pharmacies to provide affordable options for their patients, resulting in increased costs for both the patient and the healthcare system²⁰.

In addition to the economic challenges, there were also logistic complications regarding security measures. Mandatory social distancing limited patients' ability to physically visit pharmacies. Moreover, the reduction in the number of face-to-face services and the lack of preparation of both pharmacies and pharmacists regarding the transition to remote care, further limited pharmacist-patient interactions²⁰.

Telepharmacy was soon recognized as a tool that could overcome many of the challenges presented by the pandemic while also providing quality patient care. However, telepharmacy has historically been difficult to implement for most pharmacies, due to the lack of appropriate legislation, poor remuneration policies, and a lack of adequate training⁷. Nevertheless, the advent of COVID-19 did accelerate changes that have made telepharmacy a reasonable option.

In the United States, the lifting of regulations established by the Health Insurance Portability and Accountability Act (HIPAA) has allowed pharmacies to use inexpensive teleconferencing platforms, such as Zoom or Skype, which would otherwise not comply with privacy standards. Additionally, emergency legislation allowed pharmacists to perform COVID-19- related activities, such as testing, vaccinations, and telepharmacy regardless of specific state laws²¹. While these changes have made telepharmacy more accessible from a legal and monetary perspective, they were not permanent, nor did they provide guidance for full implementation.

As healthcare professionals and patients are identifying the advantages of telepharmacy, even after the pandemic has been brought under control, there is a possibility that telepharmacy will continue. While there were publications on the benefits of using telepharmacy and expert opinions and analysis prior to COVID-19, the pandemic accelerated the need to implement telepharmacy due to social distancing and quarantine requirements. Pharmacies that implemented these services during the pandemic reported it to be a success.

Telepharmacy applications worldwide Despite differences in the healthcare system between

Despite differences in the healthcare system between nations, telepharmacy models involving the active role of the pharmacist have been successful in several countries. There is a wide variety of ways telepharmacy can be used, which can adapt to the needs of the population and the location in question. Some articles report on various applications of telepharmacy worldwide:

- Telepharmacy training was established between St. Jude Children’s Research Hospital (Tennessee, USA) and Children’s Cancer Hospital (Cairo, Egypt). This center opened in July 2007 and its employees had to undergo intense training. To facilitate the education of the professionals involved, a team of pharmacists from St. Jude Research Hospital shared their know-how in telepharmacy applied to pediatric oncology, in training sessions carried out mainly via videoconferencing²².

- Telepharmacy can also be used to supervise the preparation of medicines. With this approach, a remote pharmacist can monitor the activity of technicians through a camera system during the preparation of antineoplastic treatments. This type of approach was used in France and involved two hospitals — the Center Hospitalier de La Rochelle (La Rochelle) and the Institut Paoli-Calmettes (Marseille). Cameras were placed outside the work area to avoid the contamination of preparations²³. A similar telepharmacy service was developed at the Community Cancer Network of Alberta (Canada). This study was followed by a provincial initiative to regularly use this type of approach as a standard in the preparation of oncological treatments²⁴.

- Despite differences in the healthcare system between nations, telepharmacy models involving the active role of the pharmacist have been successful in several countries. There is a wide variety of ways telepharmacy can be used, which can adapt to the needs of the population and the location in question.

- In North Dakota, one study demonstrated that videoconferencing supervision by a remote pharmacist is effective in avoiding and/or preventing errors in structures staffed solely by technicians. Thus, telepharmacy can represent a relevant approach to providing and ensuring an adequate pharmacy service in smaller drugstores²⁵.

- In California (USA), an analysis evaluated the benefits of the review of remote medication orders in three small community hospitals with no 24-hour pharmacy services. The service reviewed medication prescriptions before being dispensed, using an automated system, and prevented any problems related to medication interactions. Nurses responsible for administering the treatment could contact a pharmacist if they had questions about dispensing²⁶.

- In 2010, Catholic Health Initiatives (CHI), in partnership with the North Dakota Telepharmacy Project (NDTP), began a project aimed at creating a Central Order Entry (COE) site in Fargo (North Dakota, USA). The purpose of this service was to verify prescriptions in rural communities that lack medical care. The study involved 17 critical access hospitals located in rural areas of North Dakota and Minnesota. The COE functioned as a support where pharmacists reviewed prescriptions, supervised medication preparations, and performed remote order entry. The activity was followed, when necessary, by teleconsultations with nurses, doctors, pharmacy technicians, and patients²⁷.

- Medication reconciliation represents another area of activity for the pharmacist and can significantly contribute to avoiding unwanted drug interactions, wrong prescriptions, inappropriate dosages, and their consequences. The team at Sibley Memorial Hospital-John Hopkins Medicine, a community hospital in Washington D.C., realized that providing patients with a partially handwritten and insufficiently vetted medication list did not guarantee safe pharmacotherapy. Therefore, they requested the introduction of a telepharmacy service for medication reconciliation. With the pharmacy reconciliation program, telepharmacists were able to support local clinical pharmacists and ensure coverage during evenings, weekends, and holidays²⁸.

- Mount Isa Hospital²⁹ and Nebraska Medical Center³⁰ set up a remote pharmaceutical intervention to support underserved hospitals with adequate pharmaceutical assistance so as to ensure safe treatments for patients admitted to these hospitals.

- The Pharmacological Intervention in Late Life (PILL) program is a service designed for veterans living in rural areas in Maine (United States), established to help these veterans maintain adherence to prescriptions after hospital discharge. Geriatric patients are treated with several medications per day (polypharmacy), and this coordinated pharmacological treatment can cause several iatrogenic problems. PILL is designed to make patient medication management easier by assisting patients with phone calls to pharmacists. When there are problems, the PILL pharmacist can contact the primary care team directly to report any inappropriate treatment interactions or potentially inappropriate therapies³¹.
- Home delivery of medicines is a recently developed form of delivery that involves sending medicines directly to patients' homes or workplaces. This saves time and money, especially for patients undergoing chronic pharmacological treatment and who frequently go to a pharmacy or hospital to obtain their medications. The delivery of medicines is of great interest and utility, especially in rural areas or with relevant geographic dispersion. In Spain, this service was offered to patients with Human Immunodeficiency Virus (HIV) and was administered by hospital pharmacists⁴. A highly similar initiative was developed in Denmark³². This consisted of providing remote pharmaceutical advice to patients who obtained medicines through the Internet or received them at home. This counseling was mainly provided by telephone or video calls by community pharmacists³². Both experiences achieved the objectives of ensuring the appropriate treatment of patients. Non-negligible results were money and time savings⁴, and patient satisfaction³².
- Merchant ships (cargo) do not normally allow people from healthcare areas on board. Medical duties (including maintenance of the ship's pharmacy) are the responsibility of the captain or any other delegated officer. Supervision and maintenance of the ship's pharmacy is difficult due to the limited pharmacological/pharmaceutical skills of the officers onboard. PARSI software, developed by the Centro Internazionale Radio-Medico (CIRM) in Rome, facilitates the verification and proper control of the ship's pharmacy by a pharmacist on shore. The software includes two sections: medicines and medical devices. It also records withdrawn medicines and medical devices, and sends a notice if replacement is necessary. One key feature of PARSI is that it does not require an internet connection to work. This is a practical advantage considering that ships may not have stable internet connections everywhere³³.
- A Telepharmacy Robotic Supply Service (TPRSS) was implemented in a rural area in the northeastern regions of Scotland to oversee the dispensing of medicines using a video conferencing system. The technology used was similar to that applied in North Dakota.

In this Scottish experience, direct interaction between the patient and the remote pharmacist was possible through a videoconferencing system. This approach was necessary, as a community pharmacy was not available on site. Both patients and the pharmacy team positively evaluated this service, despite some barriers due mainly to implementation costs and increased workload. Overall, the study demonstrated the usefulness of this technology in overcoming health inequalities in a rural environment³⁴.

The International Pharmaceutical Federation (FIP) has recognized the increased use of technology as one of the key factors in addressing the future shortage of pharmacists around the world. The possibilities offered by telepharmacy are broad and can represent a suitable solution to replace an in-person pharmacist³⁵. Currently, demographic changes, which have especially impacted developed countries, have led to a greater demand for healthcare professionals, including pharmacists, as these changes have increased the elderly portion of the population and their comorbidities, along with the need for access to medicines on a regular basis³⁶. The WHO, in its Global Pharmacy Workforce Reports, indicated a lower than recommended number of pharmacists worldwide, and found that this trend had increased in countries with lower economic indicators³⁷. European institutions estimate a shortage of one million healthcare professionals by 2020, almost 10% of whom will be pharmacists³⁸. This bleak prediction will likely become reality in the very near future; in fact, this process has already begun. Therefore, it is essential to implement effective solutions quickly, considering telepharmacy as a possible solution.

The paths that Brazil must follow to implement telepharmacy

There is no perfect formula or correct path for Brazil; however, some strategies used by other countries to overcome challenges in implementing telepharmacy are centered on patient adherence to the new model. The idea of a "digital health ecosystem" — in which patients, doctors, health institutions, health plans, pharmacies, and digital health tools are interconnected in a single digital environment — provides the patient with quality of life, not needing to carry prescriptions, exams, medical records, recommendations, reports, etc. Each trip to a healthcare establishment guarantees greater security that the information is being transmitted and passed on in its entirety³⁹. Pharmacists involved in the implementation of telepharmacy recommend building a reliable relationship with patients for efficient remote consultations and ensuring privacy protection⁴⁰.

According to Shafiee et al.⁴¹, to achieve proper adherence to telepharmacy, it is essential that pharmacists spend time with patients before a virtual visit, explaining the process and providing education on how to use the new platforms. Health institutions need to prepare for patient visits, identifying their preferences and identifying those who require intensive pharmaceutical care, thereby determining the patients who would benefit most from telepharmacy care as compared to in-person care⁴¹. Furthermore, keeping patients' medical information recorded on a secure platform can optimize consultation time and make the relationship more human⁴².

It is also necessary that government interventions, such as the publication of new regulations, become public, and that knowledge, publicity, and educational campaigns regarding the new service model help to overcome some of the challenges, such as insecurity and skepticism regarding telepharmacy⁴³. The articles reviewed in this study also suggest that pharmacy councils offer training to pharmacists in order to prepare them for both routine and emergency care¹¹.

Other strategies include developing appropriate communication protocols between pharmacists and patients^{44,45}. Killeen et al. (2020) recommend using a standard disclaimer in virtual visits, recording patient satisfaction with the virtual platform and carrying out a risk-benefit assessment of the pharmaceutical consultation to determine future use, thus ensuring an efficient application of telepharmacy, as well as offering phone call or video call options, depending on the complexity of the case.

In the future, there are some steps that need to be taken to ensure that telepharmacy continues to be a meaningful service. Pharmacists and pharmaceutical associations need to advocate for more permanent legislation to continue the use of telepharmacy and increase access to it. Large hospitals or drugstore chains may need to take steps to develop robust platforms that can be used by pharmacists and patients to communicate, especially for patients with greater difficulties. To solidify its use, education on how to use telepharmacy is essential, not only for pharmacists, but also for patients. Formal continuing education programs will help pharmacists stay up to date with current telepharmacy practices and help those looking to specialize in the field. In addition to these, more studies will be needed to analyze the economic impact of telepharmacy, especially for chronic disease management. The impact of telepharmacy on patient safety and outcomes, pharmacy team workload, morale and burnout, public perception, and access to technology, as well as the implementation of telepharmacy via social media, are other important topics that deserve further investigation in future studies.

The role of Pharmacy Courses in the introduction of Telehealth and Telepharmacy

Ensuring that pharmacists are ready for telepharmacy and telehealth requires that new disciplines be included in undergraduate pharmacy courses, seeking to prepare students to provide these services in practice, whether on a routine or emergency basis.

Previously published articles documenting telepharmacy education for pharmacy students are limited to simulations and focus on students' perceptions of the effects of video on communication skills, or their abilities to collaborate with different types of healthcare professionals⁴⁶.

Patient and provider encounters using telecommunication technologies require the student to focus heavily on communication skills and nonverbal guidance to guarantee, for example, that those being counseled understand how to use medications, along with follow-up instructions⁴⁷.

Telepharmacy and telehealth training should be intentionally incorporated throughout the curriculum and should include skills-based didactics and experiential opportunities so that students learn how to improve patient outcomes through virtual interactions. These opportunities will likely span multiple courses and years of a curriculum. For example, many components of tele-education fit seamlessly into the didactic social and administrative pharmacy curriculum and pharmacy practice, especially related to policy and communications. It is important for students to experience telepharmacy and telehealth in pharmacy practice through experiential learning, whether in classroom experiences or through practical internships. It is up to those responsible for managing the curriculum of educational institutions to ensure that these skills and knowledge are taught in an intentional, longitudinal, and progressive manner⁴⁶.

As an example, Haney et al. (2015)⁴⁷ describe four steps that lead to a successful telehealth encounter, which can be easily adapted to pharmacy student training. In the first phase, the professional must prepare for the meeting by checking and practicing with the equipment; looking for a quiet place for the meeting to take place; and avoiding prints, colors, and jewelry that could distract the patient. During the second phase, called the beginning, the professional must make sure that the meeting space for themselves and the patient is free from distractions, private, and comfortable. The provider must ask permission to hold the meeting and introduce everyone involved in the experience. During the third phase, called driving, the professional ensures that all participants can be seen and heard. It is important that the provider acts as if he or she would during a face-to-face encounter. Eye contact is important and looking at notes or away from the camera may be perceived as a lack of interest or a lack of

engagement with the patient. In the fourth and final phase, the provider must summarize the telehealth encounter both verbally and through written documentation, and formulate a plan follow-up for, if necessary.

There may be a subset of patients who prefer in-person services, and may be hesitant to use technology to access pharmacy services, or simply cannot understand how to use these new services⁷. Thus, students should have experiences to increase their skills sets in order to be able to handle the nuances of remote pharmacy services.

Telepharmacy and telehealth technology are expensive and can provide operational challenges that pharmacy graduates must be prepared to solve⁷. It will be up to new pharmacy professionals to be able to use telecommunications technologies, excel in patient-centered care and communication, learn professional telehealth conduct, and be able to develop a multidisciplinary network of providers to be able to provide and be compensated for telehealth services⁴⁸.

Different considerations should be noted when the pharmacist and patient are in the same room, as compared to using telecommunications technologies. Although the advantages of telepharmacy and telehealth services are many, including patient accessibility, reduced patient travel time, and cost savings, there are also disadvantages that students and pharmacists must be prepared to face⁴⁹.

With the pandemic, many pharmacy courses around the world implemented telepharmacy and telehealth simulations out of necessity rather than through normal curriculum change processes, and thus did not undergo careful curriculum development.

It is the duty of academia to recognize that telepharmacy needs to provide a high standard of care, as it is a service that expands beyond the walls of the pharmacy to include new populations of patients with different needs⁵⁰. An analysis in the USA of approximately 1,629,000 telehealth interactions from January 2020 to March 2020, as compared to the same period in 2019, found that telehealth visits increased by 50%. It is believed that this increase, accompanied by regulatory changes, will lead to a long-term adoption of the practice, aiming to increase access to care after the pandemic⁴⁹.

Examples of tele-education programs often include a combination of didactic, simulation, and experiential training. Tele-education topics may include: developing an understanding of telepharmacy, uses and technologies, telepharmacy and telehealth etiquette, laws governing practices, and guidelines for privacy and confidentiality⁵¹.

The pharmaceutical care course should teach students many practical skills, including how to verify a prescription or medication order, provide patient consultation and education, conduct interprofessional interactions, and interpret health records. These skills are necessary to provide effective patient care in all in-person

practice settings and, now more than ever, using telepharmacy and telehealth to facilitate remote patient and provider interactions. Fundamental skills must be adapted to these new forms of practice.

For example, students should frequently be taught how to counsel patients in a community pharmacy setting. After time and practice, the skill would be adapted to the inpatient setting, with the addition of discharge counseling, often including more medications and more complex patients. These same community and inpatient skills, when taught with a telepharmacy focus, can also include the use of technology, asking the student to speak with family members or other professionals during the same meeting. Students must be taught to adapt these skills to be delivered through telecommunications technologies if they cannot be delivered in person.

Additionally, institutions should share their development and evaluation of these experiences so as to determine best practices throughout academia. With the regulation of telepharmacy in Brazil in 2022¹⁰, it is quite likely that more and more pharmacists will provide patient care services through telepharmacy in the country, and pharmacy graduates need to be prepared to work in these environments.

It is important to highlight that telepharmacy is a very useful tool when used appropriately and in certain normalized situations. It cannot be used as an indiscriminate means of increasing revenue for institutions, companies, or entities related to health. Each situation must be ethically evaluated by the pharmacist, whether or not there is a need for pharmaceutical care to be provided in person or through the telepharmacy tool.

CONCLUSIONS

Telepharmacy emerges as an innovative alternative to overcome obstacles in the care and clinical monitoring of patients, especially in rural areas and in the outskirts of major cities. Through the use of digital technologies, telepharmacy enables greater access to pharmaceutical services, offering a reliable and personalized source of information for patients, in addition to facilitating the review, replacement, or renewal of medications without the patient having to leave home. The present study, through a narrative literature review, highlighted some limiting factors, such as the predominant culture that still does not fully recognize the role of the pharmacist in health, as well as issues related to internet infrastructure in some regions. However, the contribution of this study to the literature is significant, as it highlights the growing relevance of telepharmacy in several countries as a promising strategy to improve pharmaceutical services and provide greater accessibility to healthcare. Furthermore, this study highlights the need to expand the debate and to implement this approach in Brazil, considering its potential benefits and challenges still to be faced.

Brazil, through the CFF, took an important step towards the implementation of telepharmacy in the country; however, when evaluating the current scenario, it can be seen that the most advanced fronts are those focused on the retail aspect. In this review, no proposals from private health institutions or the Unified Health System (SUS) aimed at introducing telepharmacy as a public health tool in Brazil were found. This review made it possible to understand how important telehealth was during the fight against COVID-19 and how this process was accelerated due to the health emergency. It is possible to assume that if Brazil had been more advanced in the implementation of telemedicine and telepharmacy, the difficulties faced by patients who needed treatment for other illnesses would have been less than those that occurred. It is important for the country to consider the examples of the dozens of ways that telepharmacy can be applied so as not to be restricted to pharmaceutical care and dispensing, using digital tools as a way of improving the lives of pharmacists and patients. Finally, in the same way that it is up to the government to pass legislation that is adequate for the implementation of telepharmacy, academia must also assume the responsibility of preparing future pharmacists for the digital era, formulating a more up-to-date curriculum and creating the space for experiences with new technologies.

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