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Impact of Telemedicine Services on the Resolution of Primary Care Consultations

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Summary

This study analyzed the impact of telemedicine on the effectiveness of primary care consultations. Based on an integrative review of the scientific literature published between 2018 and 2025. A primary health care (PHC), responsible for the majority of clinical demands of population, has problem-solving capacity as one of its main quality indicators and Efficiency. With the expansion of telemedicine, especially after the COVID-19 pandemic, New possibilities for remote service have emerged, which has changed the dynamics of services. Health. An analysis of 25 studies revealed that telemedicine shows positive results. regarding the case resolution rate, the reduction of unnecessary referrals, and... Increased satisfaction for both patients and professionals. On average, between 65% and 80% of requests... The problems were solved at the primary level, demonstrating gains in efficiency and cost-effectiveness. The main benefits include increased access, resource optimization, and strengthening. the bond between the patient and the healthcare team. However, challenges remain, such as digital inequality, technological limitations, professional training, and ethical issues. related to information security. It is concluded that telemedicine is a tool strategic and complementary to primary care, provided it is implemented in a way that... integrated, equitable, and supported by public policies that guarantee infrastructure. technological advancements and team qualifications.

Keywords: Telemedicine; Primary Health Care; Problem-solving capacity; Efficiency in Health; Digital Health.

Abstract

This study analyzed the impact of telemedicine on the resolution of primary care consultations through an integrative review of scientific literature published between 2018 and 2025. Primary Health Care (PHC), responsible for most population health demands, has resolvability as one of its key quality and efficiency indicators. With the expansion of telemedicine, particularly After the COVID-19 pandemic, new remote care modalities emerged, transforming healthcare service delivery. The analysis of 25 studies showed positive outcomes, including higher case

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resolution rates, reduced unnecessary referrals, and increased satisfaction among patients and healthcare professionals. On average, between 65% and 80% of clinical demands were resolved within primary care, demonstrating efficiency and cost-effectiveness gains. Main benefits include expanded access, optimized resource use, and strengthened patient–provider relationships. However, challenges persist, including digital inequality, technological limitations, professional training needs, and ethical concerns regarding data security. It is concluded that telemedicine is a strategic and complementary tool for primary care, provided it is implemented in an integrated and equitable manner, supported by public policies that ensure technological infrastructure and professional qualifications.

Keywords: Telemedicine; Primary Health Care; Resolutivity; Health Efficiency; Digital Health.

1. Introduction

In recent decades, the advancement of digital technologies has promoted transformations. profound changes in healthcare systems worldwide. Among these innovations, the following stands out: Telemedicine, a modality that uses communication and information resources to perform remote clinical care, breaking down geographical barriers and expanding access to health services. This practice has become established as a relevant strategy for optimizing The use of available resources and increasing the efficiency of services, especially in the context of... from primary health care (PHC), considered the preferred entry point to the Unified Health System (SUS) and several international health systems.

Primary care plays an essential role in promotion, prevention, diagnosis and treatment of common ailments, being responsible for meeting the majority of demands for population health. In this context, problem-solving capacity is one of the most important indicators. to evaluate the quality and effectiveness of actions taken at this level of care. It is understood by resoluteness the service's ability to meet the patient's health needs, reducing the need for unnecessary referrals to other levels of care.

Therefore, investigating how telemedicine care influences the resolution of... Primary consultations become fundamental to understanding the impact of this technology on health outcomes.

With the advent of the COVID-19 pandemic, telemedicine went from being a tool... Complementing an emergency need, promoting its regulation and use.

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on a large scale. The pandemic period highlighted the potential of telemedicine to ensure
continuity of care, reducing the burden on in-person services, and minimizing risks.
of contagion. However, it also raised questions about the effectiveness of the care provided.
remote testing, compared to the in-person model, is particularly important in terms of diagnostic quality.
to therapeutic adherence and patient satisfaction.

Given this scenario, it becomes pertinent to systematically evaluate the impacts of
Telemedicine in the effectiveness of primary care consultations, considering variables such as the rate of
case resolution, average response time, number of referrals
subsequent developments and the perceptions of users and healthcare professionals. This article
It proposes an analysis based on scientific evidence, seeking to understand if and how the
Remote care contributes to strengthening primary care and to the efficiency of...
health systems.

The overall objective of this study is to analyze the impact of telemedicine on the resolution of...
medical consultations in primary care, in light of recent national and international studies.
As specific objectives, the aim is to: (a) describe the implementation context of
(a) telemedicine in primary health care; (b) identify the methodologies used for measuring
(a) problem-solving capacity; (b) analyze performance indicators and clinical outcomes; and (c) discuss the
The benefits, limitations, and future prospects of this type of care.
In this way, the aim is to contribute to the scientific literature on the subject by providing
subsidies for the improvement of public policies and professional practices aimed at
Expanding access, quality, and effectiveness in primary health care.

2. Context of Telemedicine in Primary Care

Although telemedicine gained greater visibility during the COVID-19 pandemic,
It is the result of a historical process of integration between technology and health that has been...
developing since the end of the 20th century. The World Health Organization (WHO) defines it as
Telemedicine is defined as "the provision of health services where distance is a critical factor."
by all healthcare professionals who use information and communication technologies for
the exchange of valid information for diagnosis, treatment, and prevention of diseases and
continuing education" (WHO, 2010).

In the context of Primary Health Care (PHC), telemedicine has taken on different roles.
application methods, such as teleconsultations, teleguidance, telemonitoring, teleeducation and

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Telediagnosis. These modalities can be used both to expand access to
both for providing medical care and for supporting healthcare professionals in clinical decision-making.
In countries with decentralized and universal healthcare systems, such as Brazil, telemedicine
It represents a strategic tool for strengthening integration between different levels of
attention (Alves; Gonçalves, 2023).

Historically, the implementation of telemedicine in Brazil began in a structured way in
In 2007, the National Telehealth Brazil Networks Program was created by the Ministry of Health.
The program sought to support primary care professionals through teleconsultations,
second formative opinion and continuing education activities. This initiative marked the beginning of
the institutionalization of telemedicine in the Unified Health System (SUS), promoting the
dissemination of evidence-based practices and the reduction of regional inequalities
(BRAZIL, 2019).

With the advent of the pandemic in 2020, there was an unprecedented expansion in the use of
Telemedicine, driven by the need to maintain care during isolation.
social. Law No. 13.989/2020 and Ordinance No. 467/2020 of the Ministry of Health authorized
officially, the use of remote consultations, monitoring, and diagnostics. This regulatory framework
It legitimized remote service and encouraged the adoption of digital platforms.
on a large scale, in both the public and private sectors.

Recent research indicates that telemedicine has contributed to the decentralization of...
care and to reduce inequalities in access. A study by Santos et al. (2022)
It indicated that small municipalities, lacking specialist doctors, began to offer
support consultations with reference professionals via telehealth, which improved
The clinical outcomes improved and unnecessary referrals were reduced.

Another relevant aspect is the economic impact. According to Oliveira and Faria (2021), the use
Telemedicine reduces logistical and operational costs, in addition to optimizing patients' time.
Professionals and patients. Remote care also has the potential to strengthen the
A well-structured bond between the user and the healthcare team allows for...
Continuous monitoring of chronic conditions, such as hypertension and diabetes, through
monitoring platforms.

However, the expansion of telemedicine in primary care still faces challenges.
limited technological infrastructure, insufficient professional training, and barriers
Legal and ethical issues related to data privacy and security remain obstacles.

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Furthermore, there is inequality in access to quality internet, especially in rural areas.
and in the North and Northeast regions, which makes universal access to the service difficult.
The literature indicates that, for telemedicine to achieve full effectiveness in primary health care, it is necessary
to integrate it in an articulated way into the traditional care model, preserving the principles of
comprehensiveness, longitudinality, and coordination. This implies the creation of protocols.
specific clinical aspects, ongoing training of healthcare teams, and investments in
technological infrastructure.
Thus, telemedicine is configured as a complementary tool, and not a substitute, for...
in-person service. Its potential to increase problem-solving capacity depends on how it is handled.
is implemented, based on available resources and the level of integration with other services of
care network.

3. Analysis Methodology

This study adopts a qualitative and descriptive approach, based on an integrative review.
from the scientific literature, with the aim of analyzing the impact of telemedicine on problem-solving capacity.
from primary consultations. Integrative review is a method widely used in the sciences.
from a health perspective, as it allows for the gathering, synthesis, and discussion of results from previous research.
providing a comprehensive understanding of a given phenomenon (Mendes; Silveira;
Galvão, 2019).
The research was structured in six main stages: (1) formulation of the guiding question; (2)
(1) definition of inclusion and exclusion criteria; (2) database search; (3) categorization
of the selected studies; (5) critical analysis and interpretation of the results; and (6) synthesis of
knowledge produced. The question that guided the review was: "What scientific evidence
There are studies on the impact of telemedicine on the resolution of consultations in
primary health care?

3.1. Search strategy and data sources

The search for studies was conducted between March and September 2024, in the following databases:
PubMed/MEDLINE, Scopus, SciELO, and LILACS were used. Controlled descriptors were also used.
Uncontrolled (MeSH and DeCS) combined by Boolean operators, including:

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telemedicine, primary health care, resolutivity, patient outcomes, Brazil, access to health care, teleconsultation and telehealth.

The inclusion criteria adopted were:

(a) articles published between 2018 and 2025;

(b) original studies, systematic reviews and experience reports that addressed the Telemedicine in primary care;

(c) publications in Portuguese, English or Spanish; and

(d) Availability of the full text.

Editorials, conference abstracts, unpublished theses, and studies addressing [the topic] were excluded. Telemedicine is only used at secondary or tertiary levels of care.

After applying the criteria, 47 articles were initially selected. Of these, 25 studies They fully met the eligibility criteria and comprised the final corpus of the review.

3.2. Data analysis procedures

The data analysis was conducted through critical reading and thematic categorization of the Studies were conducted with the aim of identifying patterns, gaps, and convergences among the findings. Information was extracted regarding the country of origin of the research, the methodology employed, the number of participants, the type of telemedicine intervention, the resolution indicators and the main conclusions.

The data were organized into comparative tables and analytical matrices, allowing To visualize, in an integrated way, the results from different contexts. The main categories Emerging themes included:

1. Access and equity in remote care;
2. Efficiency and quality of consultations conducted via telemedicine;
3. User and professional satisfaction;
4. Reduction in referrals and healthcare costs; and
5. Ethical, technical, and organizational challenges.

To ensure the reliability of the analysis, the integrative review protocol was followed. recommended by Whittemore and Knafl (2005), which emphasizes source triangulation and Cross-validation between reviewers.

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4. Results

The analysis of the 25 selected studies revealed that telemedicine has a positive impact on
The effectiveness of primary care consultations, especially in contexts of professional shortages.
significant health or geographical barriers. Most of the evidence shows that
The adoption of remote consultations makes it possible to resolve clinical demands at the local level.
reducing the need for unnecessary referrals to secondary levels of
attention.

4.1. Case resolution rate and clinical effectiveness

Of the articles analyzed, 18 (72%) reported an increase in the case resolution rate after the
Implementation of telemedicine programs. Studies conducted in Brazil, the United Kingdom, and...
Canadian studies indicate that, on average, between 65% and 80% of clinical demands are met through...
Teleconsultation issues were resolved within primary care itself, without the need for...
face-to-face referral (Costa et al., 2021; Greenhalgh et al., 2022).
Among the conditions most commonly and successfully treated through telemedicine are:
if mild respiratory illnesses, high blood pressure, diabetes mellitus, anxiety, depression and
Monitoring of dermatological conditions. In the Brazilian case, a survey
A study conducted by Silva and Campos (2022) in 42 municipalities in the Southeast region demonstrated that the
The use of telehealth consultations reduced the number of referrals to specialists by 28%.
improving patient care flow and user satisfaction.

4.2. Reduction of referrals and response times

The reduction in referrals was one of the main indicators of problem-solving capacity.
Identified. Research shows that the adoption of telemedicine has resulted in an average decrease.
between 30% and 40% in low-complexity referrals (Oliveira; Faria, 2021). This data
This is particularly relevant for regions with a shortage of professionals, where travel is essential.
Even referral services represent a logistical and financial challenge for patients.
as well as for the public system.
Furthermore, a decrease was observed in the average response time between the first consultation and the...
beginning of treatment, especially in chronic conditions. According to Santos et al. (2023),

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Telemonitoring programs for hypertensive patients in the state of Ceará have reduced the
Average follow-up time reduced from 45 to 21 days, increasing therapeutic adherence and...
clinical monitoring.

4.3. User and professional satisfaction

User satisfaction is another relevant indicator for evaluating problem-solving capacity. Approximately
80% of the included studies reported satisfaction levels between good and excellent among the
patients treated remotely (Martins; Gomes; Ribeiro, 2021). The main reasons
The main reasons cited were convenience, time savings, and ease of access to a doctor.
On the other hand, some studies have highlighted challenges related to interpersonal communication and
empathy in remote service, factors that can impact the perception of quality of service.
Caution. Professionals reported difficulties in assessing nonverbal expressions, performing the
physical examination and maintaining the therapeutic bond, especially in initial consultations (Vasconcelos
et al., 2022).

4.4. Efficiency and cost-effectiveness

The results also indicate gains in efficiency and cost-effectiveness. According to data from
Pan American Health Organization (PAHO, 2022), telemedicine programs
Implementations in primary care in Latin American countries have generated an average savings.
25% reduction in operating costs, mainly due to reduced travel and improved
Utilization of the workforce.
Overall, the indicators analyzed suggest that telemedicine contributes
significantly increase the effectiveness of primary care, provided it is accompanied by...
professional training and adequate technological infrastructure.

5. Discussion

The results of this review demonstrate that telemedicine has become established as a
A strategic tool to expand access, improve efficiency, and strengthen problem-solving capacity.
in primary health care. However, the effectiveness of this approach depends heavily on

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The context in which it is implemented, the training of professionals, and the technological conditions. available.

Among the main benefits, the expansion of access to health services stands out. especially for populations living in remote areas or areas with a shortage of professionals. specialized. Telemedicine allows patients to receive medical care without

It also contributes to eliminating the need for travel, reducing costs and geographical barriers. Furthermore, it contributes for continuity of care, which is fundamental in the management of chronic diseases, promoting longitudinality and coordination of care — central principles of primary health care.

Studies such as those by Greenhalgh et al. (2022) and Santos et al. (2023) indicate that telemedicine It promotes the strengthening of bonds between the patient and the healthcare team when used. as a complement to in-person service. Digital communication, through remote monitoring, secure messaging, and follow-up consultations allow for... Closer and more continuous monitoring. This factor has been associated with greater adherence. therapeutic and improved perception of the quality of care.

Another relevant point is the rational use of healthcare resources. Telemedicine optimizes the... Managing professionals' time reduces waiting lines and decreases the number of... unnecessary referrals (Krieger, 2025). This efficiency has repercussions not only in clinical effectiveness, but also the economic sustainability of the healthcare system.

Studies conducted by the Pan American Health Organization (2022) show that programs The use of telemarketing in Latin American countries has resulted in significant cost savings. administrative and logistical.

Despite the advances, the expansion of telemedicine still faces structural and ethical challenges. Important. One of the main obstacles is inequality in access to digital infrastructure. In rural areas and urban peripheries, poor connectivity and a lack of devices are common problems. Adequate resources limit the reach of virtual services, which can reinforce inequalities. already existing in the health system (Pinto et al., 2021).

Another challenge concerns the quality of remote care. The absence of physical examination and the Limitations in observing clinical signs can compromise diagnosis in certain cases. situations requiring specific communication and history-taking skills from the professional. detailed. Furthermore, there are legal and ethical issues associated with information security and... confidentiality of patient data (Barbosa, 2025).

From the professionals' point of view, some studies report resistance to the adoption of telemedicine. due to work overload, the need to adapt to new technologies, and the perception

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loss of human contact in the care process (Vasconcelos et al., 2022). Therefore, it becomes
It is essential to promote technical and humanistic training, ensuring that the practice of
Telemedicine should be aligned with the ethical and clinical principles of primary health care.

Future prospects for telemedicine point to a trend towards hybrid integration between
In-person and remote service. The incorporation of technologies such as artificial intelligence,
Real-time clinical data analysis and integrated electronic health records can improve...
Diagnostic capability and personalized care.

Furthermore, progress is expected in the definitive regulation of telemedicine in Brazil.
ensuring uniform ethical and technical standards throughout the national territory.
Ongoing investments in digital infrastructure, systems interoperability, and training.
Multiprofessional teams are fundamental to consolidating telemedicine as a component.
stable and effective primary care.

In summary, the benefits of telemedicine outweigh its limitations when there is planning involved.
Investment and integration with care networks. This is a tool that, if used
In an equitable and safe manner, it can significantly contribute to strengthening the SUS (Brazilian Public Health System).
and for the improvement of indicators of effectiveness and quality of care.

Conclusion

This study has shown that telemedicine has contributed significantly to...
increasing the effectiveness of primary health care by providing greater access,
Efficiency and continuity of care. The analysis of the reviewed studies revealed that the
Remote care is able to meet a wide range of clinical demands, reducing
unnecessary referrals and to optimize human and material resources, especially in
regions with a shortage of professionals and limited infrastructure.

The results also indicate that telemedicine represents a complementary strategy, and
It is not a substitute for in-person care. Its effectiveness depends on factors such as...
The quality of communication between doctor and patient, technological support, and training of...
health teams and integration with information systems. Telemedicine is proving to be
particularly effective in the context of following up on chronic conditions, monitoring of
patients and continuing education for professionals, reinforcing the role of primary care.
as care coordinator.

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However, structural and ethical challenges persist. The digital divide still limits access.
of vulnerable populations, and issues relating to data confidentiality and security.
Information requires robust digital governance policies. Furthermore, it is essential that...
Professionals receive adequate training to conduct high-quality remote consultations.
Technical skill and human sensitivity, ensuring comprehensive and humane care.
In the Brazilian context, the definitive regulation of telemedicine and the strengthening of
Programs like Telessaúde Brasil Redes are fundamental steps towards consolidating this.
modality as a permanent practice in the SUS. Investments in technological infrastructure, in
Interoperability of systems and digital inclusion of users should be prioritized in
public health policies.
It can be concluded that telemedicine has high potential to increase the effectiveness of care.
primary care, provided it is integrated into a model of care that is ethical and equitable. Its
Consolidation depends on the connection between technology, professional skills, and commitment.
institutional commitment to universal access to healthcare.

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