

Telemedicine in primary health care in the post–COVID-19 era: role, implementation, and future directions

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Abstract

Background: Digital health and telemedicine represent one of the most important directions in the development of contemporary healthcare systems. Telemedicine is regarded as an innovative instrument that facilitates increased access to healthcare services, improves service quality, and enhances system efficiency, particularly at the primary healthcare level.

Aim: The present paper aims to analyse the role, opportunities, advantages, and challenges of telemedicine in the primary healthcare context, with a particular emphasis on Georgia's experience.

Methods: The study was conducted using a literature review methodology and is based on international and national scientific publications, policy documents, and official reports. Ethical approval was not required as this study is based exclusively on publicly available sources. The analysis covers the concept of digital health, definitions and historical development of telemedicine, types of telemedicine, its role within primary healthcare systems, the impact of the COVID-19 pandemic on the development of telemedicine, as well as international practice and the experience of Georgia.

Results: The findings of the literature review indicate that telemedicine significantly improves access to healthcare services, reduces time-related and financial barriers, and contributes to improved management of chronic diseases. The COVID-19 pandemic accelerated the integration of telemedicine into primary healthcare systems and demonstrated its potential to ensure continuity of healthcare services under crisis conditions. At the same time, the case of Georgia suggests that, despite an existing strategic vision and implemented initiatives, the adoption of telemedicine remains limited due to technical, infrastructural, organizational and regulatory challenges.

Conclusions: Telemedicine has considerable potential to strengthen primary healthcare and reduce health inequalities in Georgia. To fully realise this potential, integrated development (approach) of digital health, reinforcement of relevant policies, and effective implementation of telemedicine within the primary healthcare system are required. (TCM-GMJ May 2026; 11 (1): P52-P55)

Keywords: Telemedicine; Digital health; Primary health care; COVID-19; Georgia

Introduction

Digital health constitutes one of the most important transformative directions in contemporary healthcare systems. According to the World Health Organization (WHO), digital health is “the field of knowledge and practice associated with the development and use of digital technologies to improve health” [17]. This concept encompasses technological innovations aimed at enhancing the efficiency of

healthcare systems, improving access to services, and optimising population health outcomes.

The literature emphasises that the effective development of digital health requires the availability of appropriate managerial, institutional, and human resources. Under conditions of adequate investment and strategic support, digital technologies can fundamentally transform models of healthcare delivery, promote equitable and universal access to quality medical services, and increase the resilience of healthcare systems [17].

According to the Federal Communications Commission (FCC), the use of digital health technologies enables patients to make more informed decisions regarding their health, while allowing healthcare providers to reduce inefficiencies and costs and to improve the quality and accessibility of services [5]. These technologies are particularly

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important in the context of chronic disease management, prevention, and the early diagnosis of life-threatening conditions.

Factors facilitating the development of digital health are discussed in a study conducted by Bhaskar, Bradley, and Chattu, where the authors note that widespread access to electronic devices, intensive internet use, and the popularity of social networks generate demand for the development of innovative information and communication technologies (ICT), including within the healthcare sector. These processes were especially intensified during the COVID-19 pandemic, when telemedicine and digital services played an important role in ensuring continuity in the functioning of healthcare systems [3].

Methods

This study was conducted as a narrative literature review based on the analysis of publicly available international and national sources. Electronic searches were performed using the PubMed and Google Scholar databases, as well as official documents and reports published by international organisations, including the World Health Organization (WHO), the Organisation for Economic Co-operation and Development (OECD), and relevant Georgian governmental institutions.

The selected literature was analysed using a descriptive and thematic approach, allowing for the identification of key trends, benefits, challenges, and implementation patterns related to telemedicine in primary healthcare, with special attention to international experience and the case of Georgia. Ethical approval was not required, as the study was based exclusively on secondary data obtained from publicly accessible sources.

Literature Review

According to the literature, digital health encompasses various technological domains. The Federal Communications Commission categorises digital health into areas such as mobile health (mHealth), telehealth and telemedicine, wearable devices, electronic medical records (EMR), electronic health records (EHR), and personalised medicine [5].

Mobile health (mHealth) refers to the use of mobile and wireless devices to improve health outcomes, healthcare services, and medical research [11]. Wearable devices, such as smartwatches and fitness trackers, are used to monitor physiological indicators and promote patients' active engagement in managing their own health [9].

Electronic medical records (EMR) and electronic health records (EHR) ensure the systematisation and secure storage of patient medical information and enable data exchange among providers, thereby enhancing continuity, coordination, and quality of medical care [5]. Personalised medicine is based on the use of an individual's genetic profile to inform tailored prevention and treatment decisions [11].

The literature clearly distinguishes between the concepts of telehealth and telemedicine. According to the American Academy of Family Physicians (AAFP), telehealth is a broad term encompassing both clinical and non-clinical remote services, including patient and provider education,

public health, and healthcare management. Telemedicine, in contrast, is considered the clinical component of telehealth and refers specifically to the remote delivery of medical services [1].

The World Health Organization describes telemedicine as a technology-based integrated model that enables the remote implementation of diagnosis, treatment, prevention, and medical education processes [15,16]. Telemedicine services can be delivered through various channels, including video and audio consultations, text messaging, and specialised digital platforms.

Telemedicine has become particularly important in primary healthcare within contemporary healthcare systems. According to WHO, primary healthcare is the fundamental cornerstone of population health protection and aims to achieve the highest possible level of health and well-being and equitable access [18]. Telemedicine supports the achievement of these objectives, especially in remote regions and in areas with limited access to services.

Studies confirm that the use of telemedicine in the primary healthcare context increases access to services, reduces unnecessary referrals and costs, and decreases the need for patient travel [8,2]. Telemedicine does not replace face-to-face consultations; however, it effectively complements them and ensures timely medical assistance.

The COVID-19 pandemic provided a substantial impetus for the development of telemedicine. Research indicates that the use of telemedicine increased sharply during the pandemic, both among patients and healthcare organisations, which positively affected service continuity and patient satisfaction [10,12].

The COVID-19 pandemic significantly accelerated the development of telemedicine at the global level. As of March 2021, more than 119 million cases and over 2.6 million deaths had been reported worldwide [14]. The pandemic sharply increased demand for electronic healthcare services, resulting in telemedicine becoming established as an effective strategy for meeting primary healthcare demand, monitoring, and identifying new COVID-19 cases [14].

According to studies, restrictions on face-to-face consultations and self-isolation measures gave new momentum to the use of telemedicine. For example, in the United Kingdom, telemedicine was widely implemented as an alternative to in-person visits, and the majority of physicians assessed it as a safe and accessible service [14].

According to McKinsey, during the pandemic the use of telemedicine among consumers increased from 11% to 76%, while in healthcare organisations it increased by 75–150 times. Regulatory easing and financial support had a positive impact on access and patient satisfaction [10].

According to OECD reports, prior to the pandemic telemedicine was used to a limited extent; however, in 2020 the share of teleconsultations increased substantially. Across nine OECD countries, teleconsultations accounted for 21% of physician consultations in 2020, compared with 11% in 2019. In Denmark, teleconsultations accounted for almost half [12].

In Europe and the United States, telemedicine became a

key primary healthcare mechanism during the pandemic. For instance, in Italy, teleconsultations were conducted via telephone, web platforms, and applications, while in the United States in April 2020 telephone consultations accounted for 65.4% of primary healthcare consultations [10].

In Germany, telemedicine consultations increased by nearly 900 times between 2019 and 2020, and the use of electronic health applications rose sharply during the COVID-19 pandemic [10].

Although the use of telemedicine remains limited among certain groups, evidence indicates that post-pandemic access to remote services has increased for vulnerable groups, and the majority of patients are satisfied with telemedicine services [12].

In Georgia, telemedicine played an important role in the prevention and management of COVID-19, particularly at the primary healthcare level. Since 2019, the development of digital platforms and telemedicine has been initiated; more than 300 rural ambulatories were renovated, and digital technology equipment was provided with European Union support [6].

In 2020, a “Central Online Clinic” was established, which ensured remote monitoring and supervision of patients. Due to the increase in the number of patients, both staff and the number of participating primary healthcare facilities increased [6].

Telemedicine reduces financial and geographical barriers, increases service accessibility, and helps patients save time and costs [12]. Studies indicate that telemedicine improves communication between physicians and patients and increases adherence to treatment [8]. It is a particularly important instrument for developing and small countries where specialised medical services are limited [8].

According to Georgia’s national strategy and the reports of the State Audit Office, telemedicine is developing at a slow pace in the country and operates in a pilot mode. The main challenges include unequal access to digital technologies, technical problems, poor internet quality, insufficient engagement, and the absence of additional remuneration for physicians [6,13].

Additional challenges include an inadequate legal and regulatory framework, issues related to data protection and cybersecurity, as well as weaknesses in governance mechanisms [13].

An important guiding document for the implementation of telemedicine is the WHO *Consolidated telemedicine implementation guide*, which defines the technical processes of planning and implementation [16]. In Georgia, telemedicine is regulated by the Law “On Medical Practice”, as well as by a relevant ministerial order mandating the provision of teleconsultations [6].

The development of telemedicine in Georgia is defined in state strategic documents. The *National Health Strategy of Georgia 2022–2030* emphasises the importance of developing digital health and telemedicine services, particularly at the primary healthcare level [6].

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in state strategic documents. The “National Health Strategy of Georgia 2022–2030” emphasises the importance of developing digital health and telemedicine services, particularly at the primary healthcare level [6]. Although the use of telemedicine has increased in recent years, the literature points to existing challenges, including issues related to infrastructure and human resources.

Results and discussion

The literature review has demonstrated that telemedicine has become one of the important and rapidly developing components of modern healthcare systems. International experience shows that telemedicine significantly improves access to healthcare services, particularly for remote, rural, and socially vulnerable groups [8,12]. In the primary healthcare context, telemedicine is not considered a complete substitute for face-to-face consultations, but rather an effective complement that facilitates timely service delivery and reduces system overload [2].

The COVID-19 pandemic played a pivotal role in the development of telemedicine. During the pandemic, teleconsultations became one of the main forms of primary healthcare delivery, ensuring continuity of healthcare services and patient safety [14,10]. The sharp rise in telemedicine use in OECD countries demonstrated that, under crisis conditions, digital health tools are not only effective but essential [12].

The case of Georgia indicates that, despite strategic documents, declared policy priorities, and certain practical steps, the introduction and use of telemedicine remain limited. State Audit Office reports point to technical, infrastructural, and organisational problems that hinder the full functioning of telemedicine at the primary healthcare level [13]. Particularly problematic are the low level of physician engagement, incomplete utilisation of equipment, and the absence of additional incentives and remuneration.

At the same time, studies show that both patients and healthcare professionals generally evaluate telemedicine positively and recognise its benefits, including savings of time and financial resources, increased access to services, and improved management of chronic diseases [4,8]. This suggests that the existing challenges are more systemic and organisational in nature, rather than being a consequence of intrinsic limitations of the technology.

Furthermore, the literature highlights the problem of digital inequality, which is particularly relevant for low-income populations, older adults, and rural residents. Unequal access to digital technologies may deepen health inequalities if supportive policies and educational programmes are not implemented in parallel [6,12].

Conclusion

The results of the literature review confirm that telemedicine is an important and promising tool for modern healthcare systems, particularly at the primary healthcare level. International and national experience indicates that telemedicine contributes to increased access to healthcare services, improved service quality, enhanced system efficiency, and higher patient satisfaction.

The COVID-19 pandemic clearly demonstrated the po-

tential of telemedicine and accelerated its adoption in many countries. At the same time, the post-pandemic period has made it evident that sustainable development of telemedicine requires not only technological investments, but also a robust regulatory framework, development of appropriate human resources, and the training and motivation of healthcare professionals.

In the case of Georgia, despite the existing strategic vision and implemented projects, the use of telemedicine within the primary healthcare system remains limited. Existing challenges—technical shortcomings, infrastructural problems, low engagement, and insufficient motivation—require a systemic approach and coordinated policy decisions.

In conclusion, telemedicine in Georgia has significant potential to strengthen primary healthcare, particularly for rural and vulnerable groups. To fully realise this potential, integrated development of digital health, refinement of regulations, increased awareness, and effective implementation in practice are necessary, which will contribute to the resilience of the healthcare system and improved population health outcomes.

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