

DIGITAL INTERFACE IN HEALTH: ETHICAL DIMENSIONS OF TELEMEDICINE AND THE COMMUNICATION PERSPECTIVE

Dijital Ara Yüzde Sağlık: Tele-Tibbin Etik Boyutları ve İletişim Perspektifi

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The rapid advancement of information and communication technologies has made telemedicine a central component of modern healthcare. Initially developed to extend medical services to emergencies and remote regions, it has become institutionalized within health systems. The COVID-19 pandemic accelerated this process, transforming physician–patient interactions and raising questions about safeguarding ethical principles such as autonomy, privacy, justice, and beneficence–nonmaleficence in digital contexts. The ethical dimensions of telemedicine from a communication perspective, emphasizing the redefined boundaries of physician–patient relationships. It traces telemedicine's evolution from early telegraph and telephone consultations to satellite-based systems and contemporary internet applications. The analysis focuses on communication dynamics widely experienced during the pandemic, including differences from face-to-face interaction, the challenge of sustaining empathy and trust online, and shifting power relations. Findings indicate that while telemedicine enhances accessibility and efficiency, it also creates risks of miscommunication, weaker emotional connection, and data security concerns. Moreover, inequalities in digital access deepen ethical debates about justice. The study concludes that empathy, trust, and transparency must be reconsidered, offering communication-based recommendations for sustaining ethical healthcare in the digital era.

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Bilgi ve iletişim teknolojilerindeki hızlı gelişmeler, tele-tıbbı modern sağlık hizmetlerinin merkezi bir unsuru haline getirmiştir. Başlangıçta acil durumlar ve uzak bölgelerde sağlık hizmetine erişimi kolaylaştırmak amacıyla geliştirilen bu uygulamalar, zamanla sağlık sistemleri içinde kurumsallaşmıştır. COVID-19 pandemisi bu süreci hızlandırmış, hekim–hasta etkileşimlerini dönüştürmüştür ve özerklik, mahremiyet, adalet ile yararlılık–zarar vermeme gibi etik ilkelerin dijital ortamlarda nasıl korunabileceği sorusunu gündeme getirmiştir. Tele-tıbbın etik boyutlarını iletişim perspektifinden ele almakta ve dijital ortamlarda yeniden tanımlanan hekim–hasta ilişkilerinin sınırlarına odaklanmaktadır. Telgraf ve telefon aracılığıyla yapılan ilk danışmalardan uydu destekli sistemlere ve günümüz internet tabanlı uygulamalarına kadar tele-tıbbın tarihsel gelişimini izlemektedir. Analiz, pandemi sürecinde yaygınlaşan uygulamalarda yüz yüze iletişimden farklılıklar, çevrim içi ortamda empati ve güvenin yeniden üretimindeki güçlükleri ve değişen güç dengelerini incelemektedir. Bulgular, tele-tıbbın erişim ve verimliliği artırmasına rağmen yanlış iletişim, zayıflayan duygusal bağ ve veri güvenliği gibi riskler yarattığını göstermektedir. Ayrıca dijital erişimdeki eşitsizlikler, adalet ilkesine dair etik tartışmaları derinleştirmektedir. Çalışma, empati, güven ve şeffaflığın yeniden değerlendirilmesi gerektiğini vurgulamakta ve dijital çağda etik sağlık hizmetlerinin sürdürilebilirliği için iletişim temelli öneriler sunmaktadır.

INTRODUCTION

Digitalization in healthcare is not merely a technological innovation but also a profound transformation process that necessitates the redefinition of social life, health policies, and ethical values. Amid the swift progress of information and communication technologies, telemedicine has become an integral component of medical practice, giving rise to a new paradigm that reshapes the structure of the physician–patient relationship. The literature highlights that telemedicine facilitates access to healthcare services, provides cost-effective solutions, and creates significant advantages in time management (Greenhalgh et al., 2020; Smith et al., 2020). However, alongside these benefits, uncertainties regarding the preservation of ethical principles in digital environments have triggered substantial debates. While existing studies predominantly examine clinical efficacy and models of service delivery, the holistic discussion of telemedicine's ethical principles through the lens of communication theories remains relatively limited. To address this gap, this article employs a literature-based conceptual and historical analysis that synthesizes ethical principles (autonomy, privacy, justice, beneficence–nonmaleficence) with physician–patient communication practices. This framework highlights that telemedicine must be evaluated not only in terms of its technical advantages but also with regard to the ethical dilemmas it produces.

The COVID-19 pandemic accelerated these debates on a global scale, compelling health systems to adopt telehealth practices abruptly and out of necessity. Experiences gained during the pandemic demonstrated, on the one hand, that telemedicine can be permanently integrated into healthcare systems, while on the other, they revealed more pronounced boundaries concerning privacy, security, and the communicative context (Donaghy et al., 2019; Keesara

et al., 2020). This transformation has raised practical questions regarding how empathetic responses can be generated in online environments, how informed consent can be standardized in digital settings, and how the balance of power between physician authority and patient autonomy can be reestablished. Consequently, the pandemic has functioned as a natural laboratory for examining the ethical and communicative dimensions of telemedicine, providing a robust foundation for new discussions.

In this context, telemedicine is not merely a technical application but a multidimensional field that must be addressed through its ethical and communicative dimensions. Accordingly, this article aims to systematically analyze the debates in the literature and to provide an interdisciplinary framework from the perspectives of both health communication and bioethics. The study's original contribution lies in aligning telemedicine practices with ethical principles through theoretical lenses of communication (e.g., the distinction between synchronous and asynchronous interaction, the "medium is the message" approach), thereby integrating the literature on empathy and trust-building in clinical communication, the practical aspects of digital privacy, and the implications of digital inequality for the principle of justice. To this end, the study first outlines the historical development of telemedicine, followed by an examination of current debates in light of communication dynamics and ethical principles. A review methodology has been employed, synthesizing findings from accessible, peer-reviewed studies and reputable institutional reports in a comparative manner. The ultimate aim is to develop applicable, evidence-based recommendations for policymakers, clinicians, and communication professionals. Thus, the study proceeds with a holistic inquiry, beginning from the historical trajectory of telemedicine and extending to contemporary practices and ethical challenges.

Telemedicine can be described as the provision of medical services without spatial limitations, enabled by information and communication technologies. Reports from the World Health Organization indicate that this practice has increasingly been adopted at the policy level on a global scale (World Health Organization [WHO], 2010). Historically, medical consultations conducted via telegraph and telephone in the 19th century can be considered the precursors of telemedicine. In the 20th century, experiments with satellite- and television-mediated consultations further expanded its potential (Wootton, 2001). In the 21st century, the extensive adoption of the internet and mobile technologies has made telemedicine a core component of routine healthcare services. The COVID-19 pandemic, in particular, necessitated the widespread and urgent use of these practices (Smith et al., 2020). This historical evolution demonstrates that telemedicine is not merely a technological innovation but also a structural process that has transformed the ethical and communicative dimensions of healthcare services. Therefore, the historical trajectory provides a critical background for understanding telemedicine not only as a technical practice but also as a communicative phenomenon.

Communication in medical practice is not limited to the transmission of information; it is also critical for establishing trust and ethical responsibility. The physician–patient relationship is strengthened through the interplay of both verbal and nonverbal elements of communication. This process directly influences the success of diagnosis and treatment (Silverman et al., 2016). Telemedicine applications, however, transform the nature of communication by limiting key components such as empathy, body language, and face-to-face interaction. Nevertheless, the digital environment, with its advantages in accessibility and speed, enables the emergence of a new paradigm of health communication (Greenhalgh et al., 2020). This

shift necessitates the examination of ethical dimensions through a communication-oriented perspective, which constitutes the central aim of this study.

This study aims to provide a clear and systematic analysis of the ethical dimensions of telemedicine from a communication perspective. It focuses on how the principles of autonomy, privacy, justice, and beneficence–nonmaleficence are realized in digital physician–patient interactions, while also clarifying the methodology and literature review strategy. Based on this framework, the study offers evidence-based recommendations to maintain empathy, trust, and transparency in telehealth practices, particularly those accelerated by COVID-19.

RESEARCH METHODOLOGY

This study employs a systematic literature review to comprehensively examine the ethical and communicative dimensions of telemedicine. Systematic reviews offer a structured, transparent, and replicable methodological framework that enables the integration and synthesis of existing knowledge across diverse sources. In this context, peer-reviewed articles, institutional reports, and credible online publications were analyzed, with particular attention to studies documenting experiences during the COVID-19 pandemic. These sources were selected to ensure that the analysis reflects both national and international perspectives and incorporates the most relevant and up-to-date evidence. Furthermore, this study also considered international reports on health communication and access to healthcare within the framework of the Sustainable Development Goals (United Nations, 2015).

The methodological foundation of this approach is supported by the review typology developed by Grant and Booth (2009), which outlines the circumstances under which different

review designs are most appropriate and highlights the suitability of systematic reviews for theoretical and conceptual research. Telemedicine is inherently multidisciplinary—intersecting medical ethics, communication studies, digital technology research, and health policy. For this reason, synthesizing a broad and dispersed body of literature is necessary to achieve a holistic understanding of the field. The systematic review method aligns with the aims of this study, as it enables comparative, critical, and interdisciplinary analysis that cannot always be achieved through experimental or empirical designs.

Furthermore, the ethical and communicative dimensions of telemedicine often require conceptual, contextual, and theory-driven evaluation rather than direct measurement. This makes the systematic review approach particularly appropriate for exploring emerging issues such as the rapid transformations seen in the post-COVID-19 period. While the study is limited by its reliance on open-access sources and the dynamic nature of the field—which necessitates continual updates—this methodology provides a coherent and rigorous foundation for examining the ethical implications of telemedicine in line with the study's purpose.

RESULTS

This study is important because it systematically traces the historical development of telemedicine while highlighting the communication and ethical dimensions often overlooked in existing research. By integrating the principles of autonomy, privacy, justice, and beneficence—nonmaleficence into the discussion, the study contributes to the literature by offering a communication-oriented ethical framework for telemedicine practice. This approach provides both theoretical insights and practical guidance for clinicians and policymakers, particularly in the context of telehealth practices accelerated by the COVID-19 pandemic.

The origins of telemedicine emerged in parallel with the development of communication technologies. In the mid-19th century, the telegraph was used not only for medical consultation but also for rapidly transmitting information about diseases and injuries. In 1874, for example, a message regarding an injury and death was delivered via telegraph to a family located 2,000 kilometers away in Australia, an event considered in the literature as one of the earliest examples of telemedicine (Eikelboom, 2012). By the late 19th century, the first medical consultations conducted through the telephone were regarded as one of the starting points of telemedicine in its modern sense (FindEMR, 2023). The web-based narratives referenced in this section (e.g., FindEMR, Sigmund Software, Telehealth Resource Center) serve as secondary or supplementary sources for historical context; the primary references are WHO (2010) and Wootton (2001). In this regard, the World Health Organization's report outlining the global policy foundations of telemedicine (WHO, 2010), together with Wootton's systematic analysis of its historical trajectory (Wootton, 2001), constitute the main academic references for understanding how telemedicine has reached its current position. These foundational perspectives provide a solid basis for examining the ethical and communicative dimensions of digital health practices, which will be discussed in subsequent sections. Thus, the communicative processes shaped in the earliest stages of telemedicine gradually acquired a more institutional character in the 20th century through technological advancements.

In the first half of the 20th century, radio emerged as a prominent medium in telemedicine applications. The Aerial Medical Service, established in Australia in 1928, aimed to deliver healthcare services to rural and remote areas by integrating telegraph, radio, and aviation technologies (Sigmund Software, 2021). During the 1950s, efforts were made to con-

duct consultations through television and satellite connections. A notable milestone was the 1959 closed-circuit television project implemented at the Nebraska Psychiatric Institute in the United States, which marked a turning point in the development of telemedicine (Tele-health Resource Center, 2021). NASA's projects in the 1960s, together with the closed-circuit television initiatives in Nebraska, further demonstrated the global value of remote health monitoring (Anawade et al., 2024). These experiences laid the groundwork for telemedicine to evolve into a more accessible and widespread practice worldwide in the 21st century with the advancement of the internet and mobile technologies.

Since the beginning of the 21st century, with the widespread availability of the internet, telemedicine has become an integral part of healthcare systems. Internet-based video conferencing, mobile health applications, and electronic health records have transferred physician–patient interactions into the digital environment. During the COVID-19 pandemic, telehealth services were adopted worldwide at an extraordinary pace, ensuring the continuity of clinical services while simultaneously transforming the communication paradigm within healthcare systems (Keesara et al., 2020). In this period, alongside the advantages of accessibility and speed offered by telemedicine, issues of privacy, security, and ethical considerations also re-emerged as central concerns (Seabrook, 2020; Bence, 2025). Thus, the historical trajectory clearly demonstrates that telemedicine today should be regarded not merely as a technical tool but as a comprehensive field that must be evaluated in terms of its ethical and communicative dimensions. From this point onward, the discussion shifts toward the question of how telemedicine generates new dynamics of communication in contemporary practice.

Communication, one of the fundamental elements of the physician–patient relationship, takes on a different form in digital environments. In face-to-face communication, not only verbal messages but also body language, gestures, eye contact, and spatial context play a role in the interaction. By contrast, in telemedicine—particularly in interactions conducted through videoconferencing or telephone—many of these elements are reflected only in a limited manner (Greenhalgh et al., 2016). Studies indicate that empathetic responses perceived during face-to-face encounters are more restricted in online settings (Shaw et al., 2018). This constitutes a critical factor influencing patient satisfaction and perceptions of trust. Therefore, examining the dimensions of empathy and trust is indispensable for understanding the quality of communication in telemedicine.

In telemedicine applications, physicians' capacity to demonstrate empathy often depends on technical factors such as camera angle, sound quality, and the stability of the internet connection. Qualitative studies conducted during the COVID-19 period revealed that patients expected empathy from physicians in online consultations, yet establishing a trust relationship as strong as in face-to-face settings proved challenging (Donaghy et al., 2019). Moreover, the incomplete transmission of gestures and facial expressions diminishes the effectiveness of physicians' nonverbal communication skills. These limitations necessitate a discussion of how the balance of power in physician–patient relationships is reshaped within the digital context.

In telemedicine settings, the balance of power is also redefined. In face-to-face encounters, the physician typically assumes a more dominant role as the holder of both space and knowledge, whereas in digital platforms, patients may feel a greater sense of equality in communication due to the comfort of being

in their own home environment (Burrell, 2024). However, patients with limited technological skills, owing to the digital divide, may find themselves disadvantaged in interactions with physicians. This directly concerns the communicative dimension of the principle of justice. In this regard, the communication dynamics of telemedicine intersect directly with ethical principles, thereby laying the groundwork for the subsequent discussion of autonomy, privacy, justice, and beneficence–nonmaleficence. Thus, analyzing communication dynamics functions as a preparatory step for understanding how ethical principles are concretized in the digital context.

The rapid development of telemedicine has enhanced the accessibility of healthcare services while simultaneously raising debates on how the fundamental principles of medical ethics can be applied in digital environments. In this section, the principles of autonomy, privacy, justice, and beneficence–nonmaleficence are examined within the context of telemedicine from a communication-oriented perspective. These principles directly influence both individual patient experiences and the overall functioning of healthcare systems.

The principle of autonomy refers to an individual's ability to make their own healthcare decisions freely. In telemedicine, patient participation in informed consent processes is directly related to the accuracy and transparency of information delivered through digital platforms. Studies indicate that informed consent in online environments becomes more challenging due to both technical limitations and informational asymmetry (Keesara et al., 2020). This situation necessitates that physicians adapt their communication skills to the digital context. Therefore, autonomy in telemedicine should be regarded not only as a technical requirement but also as a communicative responsibility.

Privacy is one of the most critical ethical concerns in telemedicine. In digital healthcare services, factors such as the protection of personal data, the risk of data breaches, and conducting consultations within the home environment can pose threats to patient confidentiality (Dorsey & Topol, 2020). In practice, however, cases have been reported in which patient privacy could not be fully safeguarded due to security vulnerabilities in online platforms. Therefore, the debate on privacy is directly connected to the establishment of trust in digital health applications. In addition to the ethical dimensions of telemedicine in Turkey, the legal framework must also be taken into account. In particular, the Law on the Protection of Personal Data No. 6698 (Personal Data Protection Authority [KVKK], 2016) and the Regulation on the Provision of Remote Healthcare Services (Republic of Turkey Ministry of Health, 2022) constitute critical legal bases for ensuring the security and protection of patient data and privacy.

The principle of justice emphasizes the right to equal access to healthcare services. While telemedicine reduces geographical barriers and facilitates access for many patients, it also carries the risk of deepening inequalities due to the digital divide (Burrell, 2024). Therefore, in order to realize the principle of justice in telemedicine, greater investment in infrastructure and digital literacy is required. Justice thus becomes a critical criterion in determining the social inclusiveness of telemedicine. Studies conducted during the COVID-19 pandemic revealed that patients' experiences with remote healthcare services frequently involved concerns about privacy and data security. In an international study by Emani-Naeini et al. (2021), participants particularly expressed strong worries regarding the protection of personal data in online communication. Although this research was not conducted specifically in Turkey, similar concerns about privacy and autonomy are also applicable in the national context. This demonstrates that the

ethical principles discussed are not only theoretical but also highly relevant in practice.

The principle of beneficence refers to the obligation to provide benefits to the patient, while the principle of nonmaleficence emphasizes the minimization of potential risks. Telemedicine offers significant advantages in terms of speed, accessibility, and cost-effectiveness; however, patients may be exposed to harm due to misdiagnosis, communication deficiencies, or technical failures. Research conducted during the pandemic demonstrated that telemedicine could successfully substitute for face-to-face consultations in many cases, yet remained limited in complex clinical situations (Smith et al., 2020). Therefore, the balance between beneficence and nonmaleficence should be redefined according to the specific domains of telemedicine use. This pursuit of balance functions as a conceptual bridge for the interpretations to be made within the framework of communication theories in the following sections. In this respect, the transition from ethical principles to theoretical frameworks makes it necessary to reinterpret telemedicine through a communication-oriented perspective.

DISCUSSION

Marshall McLuhan's famous thesis, "the medium is the message," asserts that communication technologies do not merely transmit information but also transform the very structure of social relationships (McLuhan, 1994). In the context of telemedicine, this theory demonstrates how digital platforms reshape the physician–patient relationship. Video consultations or mobile health applications not only transfer information but also directly influence the nature of interaction, the construction of trust, and the application of ethical principles (Duffy et al., 2023). Thus, McLuhan's approach provides a powerful conceptual foundation for understanding the ethical implications of telemedicine's technical tools.

Interaction theories evaluate the effectiveness of communication based on whether it occurs synchronously or asynchronously. In telemedicine, synchronous communication (e.g., video consultation) is generally more conducive to fostering mutual responsiveness, empathy, and trust. By contrast, asynchronous communication (e.g., e-mail or messaging) provides the advantages of information storage and the possibility of review, yet it limits emotional engagement and immediate empathetic responses (Duffy et al., 2023; Ghosh et al., 2022). This dynamic directly influences how patients exercise their autonomy and how the balance of power is experienced within physician–patient relationships. Therefore, the comparison between synchronous and asynchronous communication clarifies the communicative dimensions of telemedicine that intersect with ethical principles. In asynchronous communication, obtaining and standardizing informed consent is more challenging compared to synchronous interactions. Information is often transmitted in fragmented, decontextualized, and delayed ways, which can lead to misunderstandings. This limitation reduces patients' ability to fully evaluate the information provided and to exercise their autonomy (Tushe et al., 2024).

New media theories provide an important framework for explaining the transformation that digital technologies have brought to health communication. In particular, social media has accelerated the dissemination of health information in parallel with telemedicine applications, while simultaneously increasing the risks of misinformation and disinformation (Ventola, 2014). From an ethical standpoint, this situation necessitates a reconsideration of both the principle of privacy and the principle of beneficence. The health communication literature highlights that new media tools serve not only an informational role but also a function in building societal trust. Therefore, the ethics of telemedicine cannot be fully understood without taking into

account the effects of new media (Moorhead et al., 2013). In this way, the insights drawn from communication theories provide the theoretical foundation for the recommendations to be developed in the conclusion section. From this point onward, the study offers a general evaluation based on the findings and presents suggestions for future directions.

CONCLUSION

Telemedicine has created a significant transformation in both clinical practice and society within the process of healthcare digitalization. The overall findings of this study reveal that, while telemedicine contributes substantially to healthcare systems with advantages such as accessibility, speed, and cost-effectiveness, it also raises numerous issues that require ethical reconsideration. Unlike the nature of face-to-face communication, physician–patient interactions conducted in digital environments reflect empathy, trust, and nonverbal communication only in a limited way, thereby altering the quality of these relationships. This shift affects areas ranging from how patients exercise their autonomy to the effectiveness of informed consent processes. Furthermore, risks of informational asymmetry, misunderstandings, and technical disruptions compromising the integrity of communication indicate that telemedicine is not only a technological innovation but also an ethical and communicative challenge. The findings therefore underscore the inevitability of reimagining the future of telemedicine through the principles of trust, empathy, and transparency.

Privacy constitutes one of the most critical areas of debate in telemedicine. Protecting personal health data in digital environments plays a decisive role not only in terms of individual concerns about security but also in shaping public trust in healthcare systems. Risks of data breaches, security vulnerabilities in online platforms, and the weakening of confi-

dentiality in home-based consultations highlight the necessity of robust ethical oversight mechanisms. Findings related to the principle of justice demonstrate that the digital divide limits the inclusiveness of telemedicine, leaving behind particularly those who live in rural areas, the elderly, or socioeconomically disadvantaged groups. This underscores the need for infrastructure investments, the promotion of digital health literacy, and the development of social policies to ensure that the opportunities offered by telemedicine can be distributed equitably across society. Accordingly, recommendations must be addressed not only from a technical perspective but also through social and political dimensions.

The results also demonstrate that telemedicine is not merely a technical model of healthcare delivery but a social phenomenon that must be understood in conjunction with communication theories. Viewed through McLuhan's concept of "the medium is the message," it becomes clear that digital platforms fundamentally transform the nature of the physician–patient relationship. The distinct advantages and limitations of synchronous and asynchronous forms of communication necessitate the development of new strategies for fostering empathy and trust. Moreover, the role of new media as a vehicle for both accurate information dissemination and disinformation suggests that telemedicine ethics must be considered alongside the construction of societal trust. Thus, the future of telemedicine will be shaped not only by technological advancements but also by the combined contributions of communication sciences and ethical debates.

A general evaluation indicates that the sustainability of the benefits offered by telemedicine will require more than investments in technological infrastructure; it also demands a redefinition of ethical principles within the digital context and the adaptation of communica-

tion skills to this environment. Strengthening trust, empathy, and transparency in telemedicine, safeguarding privacy through legal and technical mechanisms, reducing digital inequalities, and encouraging the more conscious use of new media can enhance both patient satisfaction at the individual level and trust in healthcare systems at the societal level. In this respect, the future of telemedicine should be regarded as a multidimensional domain shaped not only by healthcare professionals and technology developers but also by communication scholars, ethicists, and policymakers. In this way, the study offers a theoretical contribution to the literature while also developing practical strategic recommendations for health policy.

Furthermore, interdisciplinary collaboration will be vital for the future development of telemedicine. Joint efforts among medical experts, communication scholars, ethicists, and legal professionals can produce more holistic solutions in both practice and regulation. In addition, the development of international standards and the sharing of best practices across countries will contribute to the more ethical and reliable implementation of telemedicine on a global scale. The creation of community-based programs to enhance digital health literacy will constitute a strategic step, particularly for ensuring equal access to telehealth among disadvantaged groups. At this stage, it is evident that telemedicine must be established on ethical standards not only nationally but also globally.

In conclusion, telemedicine has opened the door to a new era in healthcare while simultaneously necessitating the redefinition of classical ethical principles in the digital context. While the COVID-19 pandemic has accelerated telehealth adoption, future research should evaluate telemedicine in the context of broader infectious diseases and public health emergencies. Moreover, the study emphasizes the importance of integrating Sustainable Development

Goals, sustainable health communication, and approaches to healthcare sustainability into the evaluation of telemedicine (Keenan et al., 2021). This highlights that telemedicine practices significantly contribute to improving healthcare access and supporting effective health communication, particularly within the framework of SDG 3 (Good Health and Well-being) (Hameed et al., 2024). The study demonstrates that integrating health communication strategies into telemedicine is critical for achieving both ethical and sustainable healthcare objectives. The central insight of this study is that telemedicine represents not only a technical innovation but also a domain of communicative and ethical reform. Future research should therefore more deeply integrate the ethical dimensions of telemedicine with communication sciences and guide health policies from this perspective. Ultimately, the future of telemedicine depends on the effective and measurable incorporation of trust, empathy, and justice into the digital healthcare ecosystem. Therefore, when developing future strategies for telemedicine, not only technological investments but also the enhancement of public awareness, the strengthening of digital health literacy, and the joint contributions of experts from different disciplines should be taken into account. Such a holistic and sustainable approach will enhance both individual patient satisfaction and public trust in the healthcare system.

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