The Maturity of Telemedicine: A Conceptual and Terminological Reflection

Ali Mohammad Hadianfard*

Telemedicine is a quickly expanding field that uses technology to provide healthcare remotely. As its use has grown, so has the complexity and variety of its terminology, with related terms such as telehealth, eHealth, and mHealth often used interchangeably. For instance, an analysis of publications from 2010 to 2020 in the Telemedicine and e-Health Journal showed that the keyword "telemedicine" was used more than twice as often as "telehealth" (1). A more recent study published in The Journal of Telemedicine reported similar results for publications from 2020 to 2024 (2). These findings indicate that "telemedicine" remains the most common and widely recognized term in scholarly discussions, even as alternative terms gain popularity. The development of this term also reflects wider changes in healthcare delivery. Initially, telemedicine mainly referred to remote physician-to-patient interactions (3). Over time, the concept has expanded to encompass public health, self-care, digital data management, and related areas. This shift reflects a broader understanding that telemedicine extends beyond clinical practice to encompass prevention, education, and data-driven policies (4). Therefore, terminology is not just about words; it reflects changing paradigms.

* **Correspondence to**: *Department of Health Information Technology, School of Allied Medical Sciences, Ahvaz Jundishapur University of Medical Sciences, Postal Code: 61357-15794, Ahvaz, Iran Email:* *dr.ali.hadianfard@gmail.com*

About the authors:

Ali Mohammad Hadianfard; BSc, MSc, PhD in Medical Informatics, Associate Professor, Department of Health Information Technology, School of Allied Medical Sciences, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

Editor-in-Chief

Along these lines, the Medical Subject Headings (MeSH) system, maintained by the U.S. National Library of Medicine, offers a standardized vocabulary for indexing and searching biomedical literature. According to MeSH, the term "Telemedicine" (Unique ID D017216) was introduced in 1993 and is defined as the "delivery of health services via remote telecommunications," encompassing interactive, consultative, and diagnostic services (5). This broad definition reflects the original concept of telemedicine as an umbrella term. This hierarchical arrangement highlights both the maturity and complexity of the term telemedicine. It serves as a unifying category, allowing research across various subfields, such as telehealth and mHealth, to be indexed and retrieved under a single heading. This facilitates literature searches and underscores the central role of telemedicine in digital health research. However, as research areas grow and technologies evolve, this structure can lead to confusion. For example, a review found that although "telehealth" is used more frequently, many of the specific terms in inter-professional education and practice are not defined in the MeSH. Nonetheless, authors often prefer more precise terms, such as mHealth or telehealth, to better align with their studies' focus, leading to a gradual shift in keyword usage and conceptual emphasis. This means that if authors use terms such as "telehealth" or "mHealth" but not "telemedicine," relevant studies might be overlooked in database searches.

Despite this, the literature emphasizes the need for more precise definitions, standardized frameworks, and consistent indexing to advance the field. Although MeSH lists "telemedicine" as a controlled core term, which can improve search results, users should be aware of its limitations. Supplementing MeSH searches with more specific or emerging keywords, such as telehealth, eHealth, mHealth, or digital health, can yield a more comprehensive understanding of the field. Recognizing how these terms interact can help researchers, policymakers, and clinicians better navigate the fast-changing landscape of technology-enabled healthcare.

In summary, while standardized nomenclatures like MeSH should update their terms to meet current needs, authors who want their studies to be easily discoverable using more specialized terms, rather than relying solely on specialized terms, may include these terms in the keywords list along with the preferred terms. For example, an author writing about mobile technology in healthcare might include mHealth in their keywords, in addition to telemedicine. This approach can both indicate the specialized area of study and facilitate retrieval of the study using heading terms. The tjtmed intends to follow an approach of using special terms, such as mHealth, alongside heading terms, such as telemedicine, in the keywords.

REFERENCES

1. Sodhi N, Weinstein RS, Stewart K, Doarn CR. Analysis of telehealth versus telemedicine terminology in the Telemedicine and e-Health journal between 2010 and 2020. Telemed J E Health. 2022 Dec;28(12):1861-5. doi:10.1089/tmj.2022.0073
2. Khazaneha M, Ghasemi AH, Kaabomeir F, Asabeh N. Review of the status of telemedicine subject presence in Scopus database scientific articles. J Telemed. 2025 Oct;2(3):27-42. doi:10.22034/TJT.2.3.51
3. Tuckson RV, Edmunds M, Hodgkins ML. Telehealth. N Engl J Med. 2017;377(16):1585–92. doi:10.1056/NEJMsr1503323

4. Shende V, Wagh V. Role of telemedicine and telehealth in public healthcare sector: a narrative review. Cureus. 2024 Sep;16(9):e69102. doi:10.7759/cureus.69102

5. Telemedicine. MeSH Browser [Internet]. Bethesda (MD): National Library of Medicine; [cited 2025 Dec 3]. Available from: https://www.ncbi.nlm.nih.gov/mesh?Db=mesh&Cmd=DetailsSearch&Term=%22Telemedicine%22%5BMeSH+Terms%5D