NEWPORT INTERNATIONAL JOURNAL OF SCIENTIFIC AND EXPERIMENTAL SCIENCES (NIJSES)

Volume 6 Issue 3 Page 36-42, 2025

©NIJSES PUBLICATIONS
Open Access

ONLINE ISSN:2992-5819
PRINT ISSN:2992-6149

https://doi.org/10.59298/NIJSES/2025/63.3642

Ethics in Telemedicine: Challenges and Solutions

Awafung Emmanuel

Electronics and Biomedical Engineering, Kampala International University Uganda

Email: awafungadie@gmail.com

ABSTRACT

Telemedicine has revolutionized healthcare delivery by bridging the gap between patients and providers, especially in remote or underserved areas. As it rapidly expands through innovations like teleradiology, telerehabilitation, and teledermatology, it brings with it complex ethical, legal, and technological challenges. Concerns about patient data confidentiality, jurisdictional licensing, equitable access, and culturally competent care have exposed gaps in current health governance structures. This paper explores the evolution and definitions of telemedicine, its ethical dilemmas, particularly those concerning data protection, malpractice liability, and consent, and the cultural and technological hurdles that impact service delivery. It also presents practical solutions such as ethical-by-design technologies, regulatory reforms, and stakeholder education. A multidisciplinary and patient-centered approach is essential to ensure that telemedicine not only enhances accessibility but also protects the rights, privacy, and dignity of all users.

Keywords: Telemedicine, Telehealth, Medical Ethics, Data Confidentiality, Legal Frameworks, Cultural Competence, Patient-Provider Relationship, Health Technology.

INTRODUCTION

Telemedicine offers a vital means of delivering healthcare worldwide, particularly during disasters or pandemics when in-person visits are challenging. Despite its advantages, the technology faces ethical and legal hurdles that impede its widespread use. Teleradiology is a notable example, providing direct access for patients and facilitating remote communication among healthcare providers, replacing traditional fax methods. Telerehabilitation supports patient autonomy by connecting them with the necessary professionals, reducing the reliance on institutional care. Meanwhile, DNA sequencing can streamline genetic disease therapy by minimizing lengthy tests. Concerns over data confidentiality remain, as breaches could undermine public trust, and current security standards for telecommunication devices are lacking. This review evaluates the ethical and legal complexities surrounding telemedicine, which encompasses various technologies enabling patient-professional communication from home or work. Telemedicine includes teleradiology image exchange, telepsychiatry videoconferences, and remote monitoring via telerehabilitation. These technologies fall into three categories: Store and forward, allowing data transmission between individuals; Interactive, comprising live communications; and On-body technologies, using devices to monitor bodily functions for remote patients. Overall, telemedicine enhances patient independence, reduces travel burden, shortens wait times, and aids healthcare providers in efficiently managing patient care [1, 2].

Historical Context of Telemedicine

Telemedicine made its first steps back in the 1860s, in conjunction with the advent of the telegraph, with the first reports of its use in hearing the heartbeat of a patient from a distance. Over time, the use of telemedicine progressed side by side with the evolution of telecommunication technologies, gaining in

complexity. The latest developments relate to virtual visits and e-health platforms. While these technologies may enable patients to have an interactive and reliable contact with their providers, there are still many issues to be resolved, some of them concerning the public sector, as much of the private sector is not subject to legislative obligations and restrictions. The possibility for a person does not limit the provision of telemedicine services to national territories and creates the conditions for streamlined and low-cost services. Moreover, it should be considered that many developing countries are starting to implement telemedicine services and that EU legislation must account for the possibilities offered by these services in remote and rural areas. In this context, the regulation of health professionals is of paramount importance. However, currently, most legislation considers these professionals solely in analogical settings and does not take into account the current developments of telemedicine services. The legal implications are stunning, as states must define registration, licensing, and professional certification requirements. Potential risks and abuses must be considered foreseeably: practicing overstate boundaries, privacy and data protection breaches, and malpractice. For new modes of practice, clearer laws are urgently needed. Laws should be updated and clarified. Today, the reimbursement policies are much less clear. Since physicians have to apply a wider range of procedure codes to teleconsultations, it's felt that limiting rules to get the usual rates are needed to obviate abuse and fraud. Payments should, likewise, be provided differently for providers, as some procedures are less time-consuming than others. Recently, executive orders were issued to clarify these points [3, 4].

Defining Telemedicine

The World Health Organization (WHO), the National Health Service (NHS), and other health authorities define telemedicine as the delivery of healthcare services using Information and Communication Technologies (ICTs). It allows for the exchange of information among patients, healthcare workers, and health service providers using audiovisual channels. However, there are several definitions of telemedicine, which is an umbrella term covering a wide range of medical applications and uses. The definition of telehealth is varied. The American Medical Association (AMA) broadly defines telehealth as a mode of using telecommunications and electronics to provide health information. According to the NHS, telehealth refers to the use of Information Communication Technologies (ICT) to deliver healthcare services at a distance. The federal Health Resources and Services Administration employs a very broad definition of telehealth, including all the services that can be provided at a distance through ICT. Teledermatology refers to the delivery of dermatological services through ICT. Changes that used to pass between patients and doctors through written letters, Polaroid cameras, and faxes are now passed through videoconferencing and still images over the Internet. Video consultations are not used for teledermatology, but still image and live teledermatology are. Hybrid teledermatology is defined as telemedicine services that make use of two or more types of telecommunication systems [5, 6].

Ethical Principles in Healthcare

Telemedicine extends conventional healthcare through technology and is bound by state laws, but ethical issues arise when services are rendered outside the provider's jurisdiction, known as remote telemedicine. Addressing these ethical concerns is essential for safe and reliable telehealth services globally. Remote telemedicine can be seen as an extension of traditional healthcare, requiring advanced technology as distance increases. As telemedicine evolves, it presents opportunities for health-related activities beyond a provider's competency jurisdiction, raising significant ethical issues. The rise of global telemedicine introduces new ethical dilemmas. For patients, understanding legal implications is crucial, as malpractice claims rely on the provider's jurisdiction. Defending against such claims hinges on the healthcare provider's legal framework, while the governance of telemedicine crosses legal lines, complicating matters. Different legal and ethical frameworks may coexist, resulting in fundamental issues about the legality of services across varying jurisdictions. Thus, the ethical questions accompanying telemedicine development need thorough consideration, separate from legal statutes [7, 8].

Challenges in Telemedicine Ethics

Telemedicine is increasingly valuable in clinical practice, but it presents several ethical challenges. Health professionals must proactively address these dilemmas in their everyday telemedicine practice. This involves evaluating technology and infrastructure while developing new routines and procedures to effectively utilize available options. Understanding the medical, legal, ethical, and technological aspects is crucial to tackling these ethical issues. Various health professions utilize telehealth through videoconferencing, telephone consultations, and asynchronous medical record reviews. The widespread use of video and phone technology allows many professionals to participate in telehealth. However, the

involvement of commercial companies lacking proper health monitoring and data security risks patient safety. It is vital to develop sustainable teleconsulting practices and enhance research on telemedicine ethics, decision-support systems, and international regulations, especially in developing countries. Involving patient advocates, ethical organizations, and national health systems will promote a more comprehensive view of telemedicine ethics. Businesses must characterize telemedicine systems, assess how information is processed, and evaluate the roles of medical professionals in system development. Determining the appropriateness of telemedicine for specific cases and selecting the best technology is essential. Proposals for telemedicine services should also undergo theoretical evaluation, ensuring that novel technologies are integrated responsibly while assessing their ethical implications from the beginning [9, 10].

Legal Considerations

Legal barriers are one of the biggest obstacles in the provision of teleradiology services. If a radiologist does a reading of an exam from a facility that is either outside the region where he/she practice or in a different state, problems arise due to the codes of ethics regulating professional activities in different states. A licensing system allows physicians to hold a license to practice in a specific state only. This has been a point of contention in malpractice suits. One nurse may be sued in one state where the law is more favorable to the patient, and another physician in another state where the law is more favorable to the practitioner. The question of where a service is rendered comes into play because the practice occurs where the patient is located. However, in countries where telemedicine is accepted, the legislation about which person is liable is more evident. In those countries, physicians are allowed to talk with local patients via video conferencing platforms where the teleconsult is then put into the patient's medical record, and to e-prescribe medications to the patients in a foreign land. The principal legislation issues, which hamper an easy solution to the above-described legal issues, were about liability of malpractice, registration of health professionals, data protection, regulation of radiologists in different countries, and minimum quality requirements. The European principles of Law need to be adaptable to this advancing technology. Regulatory barriers such as formal legislation are necessary because it is impossible to operate in a legal vacuum. The lawyer has to find out which laws or guidelines of conduct apply to be able to provide the service in a proper legal setting. Regulating the technical aspects of remote observations for EEG, and as niche and remote as telepathology is acknowledged as less of a problem than the legal environment in which it is embedded. Therefore, it is necessary to have countries with an appropriate governance body to be able to connect remote locations [11, 12].

Cultural Competence in Telemedicine

In order for telemedicine to be the best addition to healthcare, cultural competence has to be taken into consideration. Mobile technologies offer a new opportunity to provide and support interventions in underserved populations. However, the potential for failure is also heightened if the cultural issues that affect this population are not taken into account. Cultural competence is defined as having a set of attitudes, skills, behaviors, and policies that allow professionals to work effectively in cross-cultural situations. Culture can be defined as the common norms, values, beliefs, and behaviors of a group of people. Culturally competent providers gain the knowledge and skills to enhance their understanding of the relationship between culture and health perceptions and behaviors, and modify their practices accordingly. Cultural competence has become a focus of concern for many disciplines and is regarded as essential in the fields of clinical medicine, public health, and social work. It is not the intention of this article to suggest that telemedicine is the only tool that is available on the internet and that can be used for good or for ill. It is simply one tool among many, and provides no silver bullet. In so many instances, tools can be misused for bearing arms. It is, however, a tool that has shown great promise in improving access to health care, particularly for the underserved in their interactions with the health care systems and health maintenance organizations. This technology permits a wide range of health care variety and contributes to accessible and efficient delivery of services, enhanced patient-physician interaction and experience, and better clinical outcomes and patient health status [13, 14].

Technological Challenges

Telemedicine usage is growing due to its benefits, but it faces challenges. Local health systems typically determine telemedicine programs, and this analysis includes regulation, certification, reimbursement, and patient consent. A solid regulatory framework for personal data needs development by relevant bodies, accredited by a European institution, to help national health systems agree on standard protocols that uphold telemedicine principles. Certification can ensure ready access to accepted technologies for health professionals. Collaboration with telecom companies is crucial for equitable access to fast internet across

Europe, alongside defining International Patients' Rights to handle complaints. Technical hurdles can emerge with gait algorithms that monitor lower limb biomechanics remotely, requiring patients to bend forward to see their back view on-screen. Instability occurs with the PS system, particularly on mobile devices, and communication disconnections may disrupt video conferences. System errors, like sound control issues or multi-device connectivity problems, necessitate operators to gain technical knowledge for telemedicine management and enhance distance clinical studies. Insufficient understanding, fear of communication difficulties, and concerns about legal protections impede telemedicine adoption. Physicians must verify device usability and their communication skills before consultations, with contingency plans in case of issues. Building trust in institutions or physicians may encourage patient participation, while education for both parties can alleviate worries and invalidate misconceptions [15, 16].

Patient-Provider Relationships

Change was occurring in U.S. healthcare delivery before COVID-19, with new payment models emerging and technology starting to disrupt traditional practices. While some patients gained increased access, others faced reduced access. The goal was to ensure that these changes led to net societal benefits. Following the first U.S. COVID-19 cases, telemedicine visits surged, but healthcare systems struggled to adapt to this new landscape. Before the pandemic, telemedicine was largely underdeveloped, with few hospitals implementing small-scale initiatives without executive support. Large health systems offered poor experiences, as patient intake processes remained in-person and therapies relied on in-office monitoring. Busy physicians, focusing on short visits, hurried to create "virtual waiting rooms," often leaving patients in limbo while they managed their schedules. Patients experienced delays and might miss valuable responses. Additionally, managing care for those with chronic illnesses or social isolation became increasingly complex. Changes in routines and decreased access to care could worsen chronic conditions like asthma and diabetes, while isolation could be detrimental for patients with mixed dementia. Similarly, schools struggled to adapt to younger children learning at home, as interaction with peers became limited, revealing the unpreparedness of the system [17, 18].

Solutions to Ethical Challenges

Using models of telemedicine, which include provider-to-provider, patient-to-provider, remote patient monitoring, mobile health, and consumer health applications, allows for the remote delivery of healthcare services. As advances resulting in the accessibility and affordability of devices and applications continue to increase, telemedicine is becoming a more accepted method of providing healthcare by patients, providers, and institutions alike. The continued improvement and diffusion of health technologies should raise ethical dilemmas, facilitate the ability of healthcare systems to respond, and underly existing and future legal frameworks. Educational initiatives can leverage the interest of academics, students, and practicing professionals to embrace telemedicine as a positive tool to augment the effectiveness and happiness of individuals or groups exposed to it, and moreover, the medical encounters using it. In an age in which telemedicine does not simply allow but forces the delivery of health services at a distance, providers are challenged by the need to adapt their practice to this new form of human interaction. The clinical context is no longer clear. The basis of the social contract upon which medical practice has rested since the Hippocratic era is at stake. Moreover, rapid growth requires the acceptance of ethical principles to underpin safe and sustainable usage of the technology in the future. Such principles will help frame healthcare institutions, providers, devices, artificial intelligences, and software into a greater system able to protect the rights of the most fragile parties involved in the health enterprise. Such an evolution would be a fourth industrial revolution in which ethics would be designed into devices, software, and artificial intelligence. Only with a change in scale in the bureaucracy of distributed AI could humans not stretch their finite lives and end up voluntarily surrendering their autonomy and dignity to machines. Therefore, telemedicine is at a fork in the road; as with threefold telemedicine before it, this additional, fourth form of telemedicine could provide unprecedented opportunities for improving health, or corroborating trends already evident with threefold telemedicine in which the health enterprise is premised upon the exploitation of the most fragile, without duties owed directly in reciprocity by institutions, providers, devices, software, or artificial intelligences [19, 20].

Future Directions in Telemedicine Ethics

Considering the rapid expansion of telemedicine, it is essential to anticipate future potential challenges and controversies that could arise while this sector continues to regulate itself and generally mature. As technological advancements improve methodologies and access to related services, legal, medical, ethical, and sociocultural norms and standards must adapt in tandem. To begin, it is entirely possible that

proponents of territorial moral codes could criticize or otherwise restrict telemedicine services operating under differing laws and ethics codes. In a relatively earlier research on the subject, it has been noted that providers who needed to consider suitable fees could first think about selecting patients for cash-only care and more cautiously choosing among service requests. Careful consideration would likely tend toward denial of urgency where it existed for any purpose other than medical. In addition to that, telemedicine could also bring increasing controversy regarding whether treatment accuracy is satisfactory under present conditions or whether more rigorous standardization is warranted. Such considerations are currently minor among ethical debates, but the issue could grow in prominence as telemedicine becomes more normal. There are also continuing challenges to accessibility-relevant ethical considerations. In addition to the existing worries and debates regarding internet access, affordability, and user comfort, new considerations about equity of access to the technology as a platform could arise. Currently, widely inaccessible but rapidly developing technology, including artificial intelligence and augmented reality, could create greater divides among cities and between wealthier countries and poorer ones. Finally, telemedicine is already subject to competition and cost-based ethical issues not general to other forms of health care, and some of these criticisms are already substantiated in specific cases. In particular, telemedicine-based companies could offer undistinguished, much lower-quality services, and the lower costs could implicitly reinforce the existing hierarchies of proportionate pre-existing coverage. The risk of snack-sized care, designed to be ongoing, exploited without involving any likely improved solution or receipt of the provision, is also implicated in ethical analysis. Consumer-oriented patients may purchase persistently recurring optional diagnoses or even prescriptions to manage general away-from-city stress, similarly to diet or nutrition, or exercise regimes [21, 22].

Case Studies

Telemedicine is defined as the delivery of health care services and information via telecommunication technologies. In the telemedicine environment, the impact of moral dilemmas, ethical principles, and respect for legal aspects is paramount. The emergence of telemedicine has created a plethora of enthralling possibilities for the transfer of patient information with minimal delay and lower costs. However, it has also ushered in ethical and legal concerns, challenges, and complexities that must be addressed to fully and appropriately receive the benefits that it affords. Currently, telemedicine has received considerable awareness and attention from health professionals and researchers focused on reviewing its tremendous capabilities for improving health wherever individuals reside. Doing so requires that a proper foundation be established so that telemedicine can progress not only efficiently, but ethically and legally, in consideration of fair use and equitable access to needed services. This includes a thorough review of existing problems with the ethical practice of telemedicine in order to establish future directions for the best practices of telemedicine in accordance with ethical principles. It is essential to consider future possibilities for the ethical evolution of telemedicine. Ethical approaches have varying implications for both the perception and reality of telemedicine profitability. Consequently, a thorough grounding and understanding of ethics is paramount in framing, communicating, and disseminating telemedicine in a clear manner that respects ethical principles. Thus, the fundamental framework of telemedicine ethics and its overarching principles must be explored, outlined, and understood. Telemedicine is an exciting means by which there exists the possibility of conquering geographical barriers of distance so that health services may improve globally. In order to reap the maximal benefits of telemedicine, a careful review of its ethical standing must be undertaken, and future avenues toward the ethical use of telemedicine technology must be investigated. Current ethical challenges that the implementation and use of telemedicine faces, concerns about equity of service to specific populations, and thoughts on the ethical use of rapidly advancing telemedicine technology are reviewed and discussed. By taking an ethical approach to the implementation of telemedicine, it is hoped that the possibility of drastic improvements in the quality of access to health services for individuals will grow ever more real over time [23, 24].

Recommendations for Policymakers

In telemedicine, ethical, legal, and practical challenges will persist. The evolution of telemedicine necessitates foresight in addressing future obstacles, ethical implications, and factors often overlooked. As telemedicine practices advance, policymakers and regulators must ensure that ethical standards in clinical practice remain intact. Ensuring doctor-patient confidentiality and safeguarding personal health information will become more challenging in a digital environment. Technological solutions should bolster the protection of personal health data, tackle legal loopholes, and ensure accountability in cases of violations concerning telemedicine privacy laws. Telemedicine should be subjected to existing oversight, given its shared risks with traditional consultations. It also introduces unique ethical issues, such as the

heightened risk of incomplete tele-diagnosis. A greater dependence on automation doesn't eliminate the need for qualified oversight in these processes. Accountability is crucial to safeguard the quality of care in automated telemedicine services. All actions, whether automated or manual, require proper supervision to ensure they adhere to legal and ethical standards. Furthermore, defining and proving evidence of care remains challenging, necessitating an adapted approach to ethics review in telemedicine. New practices often require scrutiny and regulation, especially those lacking evidence in the current literature. Global disparities in compensation and skills will limit telemedicine's reach. Emergent telemedicine industries must ensure they comply with regulations to maintain established oversight. Developing industry codes of conduct can address regulatory gaps, guiding practices, and advocating for integrity in global telemedicine [25-28].

CONCLUSION

Telemedicine has emerged as a transformative force in modern healthcare, yet its promise is constrained by ethical, legal, technological, and cultural complexities. Without clear standards, patients risk data breaches, miscommunication, and substandard care, especially across international or rural contexts. Addressing these challenges requires coordinated efforts from policymakers, healthcare providers, technologists, and ethicists. Solutions include updating legal frameworks to accommodate cross-border teleconsultations, promoting culturally sensitive care practices, integrating secure data protocols, and training providers in ethical decision-making for digital contexts. As telemedicine enters a new era shaped by artificial intelligence and remote diagnostics, embedding ethics into its foundation is imperative. Doing so will not only safeguard human dignity but also ensure the long-term viability, trustworthiness, and inclusivity of virtual healthcare systems.

REFERENCES

1. Kaplan B. Ethics, guidelines, standards, and policy: telemedicine, COVID-19, and broadening the ethical scope. Cambridge quarterly of healthcare ethics. 2022 Jan;31(1):105-18.
2. Anawade Sr PA, Sharma D, Gahane S. A comprehensive review on exploring the impact of telemedicine on healthcare accessibility. Cureus. 2024 Mar 12;16(3).
3. Larkin PJ, Fishpaw M, McCarthy L. Telemedicine and Occupational Licensing. Administrative Law Review. 2021 Oct 1;73(4):747-86.
4. Shawwa L. The use of telemedicine in medical education and patient care. Cureus. 2023 Apr 18;15(4).
5. Shende V, Wagh V. Role of Telemedicine and Telehealth in Public Healthcare Sector: A Narrative Review. Cureus. 2024 Sep 10;16(9).
6. Intan Sabrina M, Defi IR. Telemedicine guidelines in South East Asia—a scoping review. Frontiers in Neurology. 2021 Jan 13;11:581649.
7. Patel V, Saikali S, Moschovas MC, Patel E, Satava R, Dasgupta P, Dohler M, Collins JW, Albala D, Marescaux J. Technical and ethical considerations in telesurgery. Journal of Robotic Surgery. 2024 Jan 17;18(1):40. robotelesurgaicc.org
8. Wang C, Liu S, Yang H, Guo J, Wu Y, Liu J. Ethical considerations of using ChatGPT in health care. Journal of Medical Internet Research. 2023 Aug 11;25:e48009. jmir.org
9. Membrado CG, Barrios V, Cosín-Sales J, Gámez JM. Telemedicine, ethics, and law in times of COVID-19. A look towards the future. Revista Clínica Española (English Edition). 2021 Aug 1;221(7):408-10. nih.gov
10. Ugwu OP, Alum EU, Ugwu JN, Eze VH, Ugwu CN, Ogenyi FC, Okon MB. Harnessing technology for infectious disease response in conflict zones: Challenges, innovations, and policy implications. Medicine. 2024 Jul 12;103(28):e38834.
11. Dash S, Aarthy R, Mohan V. Telemedicine during COVID-19 in India—a new policy and its challenges. Journal of Public Health Policy. 2021 May 19;42(3):501.
12. Solimini R, Busardò FP, Gibelli F, Sirignano A, Ricci G. Ethical and Legal Challenges of Telemedicine in the Era of the COVID-19 Pandemic. Medicina. 2021 Nov 30;57(12):1314.
13. de Oliveira Andrade A, Soares AB, de Andrade Palis A, Cabral AM, Barreto CG, de Souza DB, de Paula Silva F, Santos FP, Silva GL, Guimarães JF, de Araújo LA. On the use of telemedicine in the context of COVID-19: legal aspects and a systematic review of technology. Research on Biomedical Engineering. 2021 Mar 13:1-9. springer.com
14. Shlobin NA, Kanmounye US, Ozair A, de Koning R, Zolo Y, Zivkovic I, Niquen-Jimenez M, Affana CK, Jogo L, Abongha GB, Garba DL. Educating the next generation of global

neurosurgeons: competencies, skills, and resources for medical students interested in global neurosurgery. World neurosurgery. 2021 Nov 1;155:150-9. [HTML]
15. Kale S, Hirani S, Vardhan S, Mishra A, Ghode DB, Prasad R, Wanjari M. Addressing cancer disparities through community engagement: lessons and best practices. Cureus. 2023 Aug 14;15(8):e43445. cureus.com
16. Ugwu OP, Alum EU, Ugwu JN, Eze VH, Ugwu CN, Ogenyi FC, Okon MB. Harnessing technology for infectious disease response in conflict zones: Challenges, innovations, and policy implications. Medicine. 2024 Jul 12;103(28):e38834.
17. Tully L, Case L, Arthurs N, Sorensen J, Marcin JP, O'Malley G. Barriers and facilitators for implementing paediatric telemedicine: rapid review of user perspectives. Frontiers in pediatrics. 2021 Mar 17;9:630365.
18. Kruse C, Heinemann K. Facilitators and barriers to the adoption of telemedicine during the first year of COVID-19: systematic review. Journal of Medical Internet Research. 2022 Jan 4;24(1):e31752.
19. Hsiao V, Chandereng T, Lankton RL, Huebner JA, Baltus JJ, Flood GE, Dean SM, Tevaarwerk AJ, Schneider DF. Disparities in telemedicine access: a cross-sectional study of a newly established infrastructure during the COVID-19 pandemic. Applied clinical informatics. 2021 May;12(03):445-58. thieme-connect.com
20. Gareev I, Gallyametdinov A, Beylerli O, Valitov E, Alyshov A, Pavlov V, Izmailov A, Zhao S. The opportunities and challenges of telemedicine during the COVID-19 pandemic. Frontiers in Bioscience-Elite. 2021 Dec 20;13(2):291-8. imrpress.com
21. Moulaei K, Sheikhtaheri A, Fatehi F, Shanbehzadeh M, Bahaadinbeigy K. Patients' perspectives and preferences toward telemedicine versus in-person visits: a mixed-methods study on 1226 patients. BMC Medical Informatics and Decision Making. 2023 Nov 15;23(1):261. springer.com
22. Garavand A, Aslani N, Nadri H, Abedini S, Dehghan S. Acceptance of telemedicine technology among physicians: a systematic review. Informatics in Medicine Unlocked. 2022.
23. Parveen G, Manchikanti P. Patenting telemedicine tools: A cross-country analysis of technologies related to remote patient monitoring. World Patent Information. 2025 Jun 1;81:102361.
24. Daum N, Blaivas M, Goudie A, Hoffmann B, Jenssen C, Neubauer R, Recker F, Moga TV, Zervides C, Dietrich CF. Student ultrasound education, current view, and controversies. Role of Artificial Intelligence, Virtual Reality and telemedicine. The Ultrasound Journal. 2024 Sep 27;16(1):44. springer.com
25. Nobile CG. Legal aspects of the use artificial intelligence in telemedicine. Journal of Digital Technologies and Law. 2023;1(2).
26. Mishkin AD, Zabinski JS, Holt G, Appelbaum PS. Ensuring privacy in telemedicine: Ethical and clinical challenges. Journal of Telemedicine and Telecare. 2023 Apr;29(3):217-21. [HTML]
27. Linz W, Andrzejewski Jr C, Hofmann JC. Apheresis medicine in the era of advanced telehealth technologies: An American Society for Apheresis position paper part II: Principles of apheresis medical practice in a 21st century electronic medical practice environment. Journal of Clinical Apheresis. 2022 Feb;37(1):122-6. wiley.com
28. Ajibade VM, Madu CS. The Integration of Artificial Intelligence Into Precision Medicine for Neuro-Oncology: Ethical, Clinical, and Nursing Implications in Immunotherapy Care. Cureus. 2025 May 29;17(5):e85024.

CITE AS: Awafung Emmanuel (2025). Ethics in Telemedicine: Challenges and Solutions. NEWPORT INTERNATIONAL JOURNAL OF SCIENTIFIC AND EXPERIMENTAL SCIENCES 6(3):36-42 https://doi.org/10.59298/NIJSES/2025/63.3642