Legal and Ethical Regulation on Childcare Digital Health System in Nigeria and Uganda: Issues and Challenges

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Abstract

The implementation of digital technologies in the healthcare system for children has a lesser but still noticeable effect on the health systems of Nigeria and Uganda. Digital tools such as electronic pediatric health records, tele-pediatric, m-health apps, and data-driven diagnostic platforms have been implemented. However, children's vulnerability in the digital healthcare domain has been significantly increased by the new technologies. The research scrutinizes the current insufficient and disorganised legal and ethical systems that control child digital healthcare in Nigeria and Uganda. The research employs a doctrine-based method, utilising the PRISMA Guide to systematically identify, screen, and analyse relevant laws, policies, and academic literature on children's rights. The results indicate that both countries have generic health and data protection laws that can be applied to digital health in general, but regulations and ethical standards (such as consent, data privacy, cybersecurity, parental authority, and professional liability) specific to children remain underdeveloped and poorly enforced, specifically in Nigeria. The study makes the case for child-friendly digital health legislation, clear consent standards, rigorous institutional oversight, and regional collaboration to ensure children's rights and welfare in digital healthcare systems.

Keywords: *Ethical regulations; Health law; Childcare digital health; Nigeria and Uganda*

Introduction

A society is judged not by the brilliance of its technologies, but by how carefully it protects its children's health wellbeing.[1] This quote reflects the situation in both Nigeria and Uganda, where children have always been the focal point of health policies, but they are still the least protected group in terms of medical services.[2] The medical delivery system for children in these countries has always been based on personal visits, written records, and care limited to the health facilities[3]. However, the system, despite being personal, has always been hampered by few pediatric doctors, (bad record keeping in Nigeria), long distances to health facilities, and unequal access to health care between cities and rural areas[4]. All these issues have adversely affected timely diagnosis, discontinuation of care, and monitoring of children's health outcomes.

Moreover, population growth, new diseases, and pandemics have revealed even more of the limitations of pediatric healthcare systems in Nigeria and Uganda[5]. Children bear the brunt of inadequate and delayed health services because their

[1] Anne-Maree Farrell et al., *Health Law: Frameworks and Context*, 1st ed. (Cambridge University Press, 2017), https://doi.org/10.1017/9781316092675.

[2] Abdullahi Abubakar Kawu et al., "FAIR Guidelines and Data Regulatory Framework for Digital Health in Nigeria," *Data Intelligence* 4, no. 4 (October 2022): 839–51, https://doi.org/10.1162/dint_a_00174.

[3] David Akeju, Friederike Ziegler, Adlight Dandadzi, Elizabeth Nabirye, Eve Namisango, Elizabeth Namukwaya, Samuel O. Adejoh, Kehinde Okunade, Yu Fu, Bassey Ebenso, Kennedy Nkhoma, and Matthew Allsop. "The Use of and Need for Data and Information by Health Professionals Supporting Palliative Cancer Care Services in Sub-Saharan Africa." *Health Informatics Journal* 28, no. 4 (2022); https://doi.org/10.1177/14604582221140134.

[4] Abdul Azeez Yusuf, Mukasa Charles, Muyinga Samuel, Abdullahi Bello & Lukoma Ronald, "The development and growth of AI in uganda: How is uganda faring from a legal perspective?", *Kampala International University Law Journal* Volume. 6, Issue 2 (2024), 204-223, https://doi.org/10.59568/KIULJ-2024-6-2-11

[5] Paul Atagamen Aidonojie, Oluwaseye Oluwayomi Ikubanni, and Nosakhare Okuonghae. "The Prospects, Challenges, and Legal Issues of Digital Banking in Nigeria." Cogito 14, no. 3 (September 1, 2022); https://doi.org/10.5281/zenodo.7228546; Aishatu Eleojo Adaji, "Rethinking Biotechnology Regulation in Nigeria: The Role of Open Science and Human Rights Lessons from India," *Kampala International University Law Journal* 7, no. 1 (2025): 24–39; https://doi.org/10.59568/KIULJ-2025-7-1-02

health concerns usually demand prompt action and regular monitoring[6]. In this way, the challenges faced have paved the way for the healthcare industry to come up with new and creative solutions for children's health services, that is a digitalized healthcare system which is now more efficient, more accessible, and more responsive.[7]

The Child Digital Healthcare System, which relies heavily on digital technology, was introduced as a transformative response to existing circumstances[8]. Child digital healthcare encompasses an array of digital technologies,[9] such as tele-paediatrics, mobile health applications, electronic pediatric health records, remote monitoring tools, and data-driven diagnostic platforms, that are innovatively applied in the prevention, diagnosis, treatment, and management of children's health issues[10]. Nigeria and Uganda are slowly but surely adopting these systems to bridge the geographical gaps, maintain the flow of care, and enhance the health data management of children. In other words, the child digital healthcare systems in both countries have the same goal of upgrading the monitoring of vaccinations,

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[6] European Commission: Directorate-General for International Cooperation and Development and SOS Children's Villages International, Towards the right care for children – Orientations for reforming alternative care systems – Africa, Asia, Latin America, Publications Office, 2016, https://data.europa.eu/doi/10.2841/069502.

[7] Deborah Lupton, "Young People's Use of Digital Health Technologies in the Global North: Narrative Review," *Journal of Medical Internet Research* 23, no. 1 (January 2021): e18286, https://doi.org/10.2196/18286.

[8] Sarah E. Wilensky and Joel B. Teitelbaum. *Essentials of Health Policy and Law*. 5th ed. New York: Foundation Press, 2023, https://samples.jblearning.com/9781284247459/9781284247497_FM.pdf; Paul Atagamen Aidonojie, Souad Ezzerouali, Damina Joshua John, Kajja Timothy, and Khadija Ibrahim Maifada, "Digital Technology in Complementing the Laws in Curtailing Domestic and Gender-Based Violence in Nigeria and Uganda," *Kampala International University Law Journal* 7, no. 1 (2025): 81–92; https://doi.org/10.59568/KIULJ-2025-7-1-06

[9] Maksut Senbekov et al., "The Recent Progress and Applications of Digital Technologies in Healthcare: A Review," *International Journal of Telemedicine and Applications* 2020 (December 2020): 1–18, https://doi.org/10.1155/2020/8830200.

[10] Sherri Lynn Bucher, Allison Young, Madison Dolan, Geetha Priya Padmanaban, Khushboo Chandnani, and Saptarshi Purkayastha. "The NeoRoo Mobile App." *PLOS Digital Health* 2, no. 10 (2023): e0000216; https://doi.org/10.1371/journal.pdig.0000216

performing maternal-and-child-health surveillance, spotting illnesses early, and making available specialist pediatric care[11].

Mobile health platforms and telemedicine have made it possible for caregivers to consult doctors even if they are far away, and the use of digital records has improved the communication between healthcare providers[12]. At the same time, the ever-increasing reliance on digital platforms creates numerous legal and ethical dilemmas, particularly regarding children's consent, data privacy, cybersecurity, and parental authority.[13]

Currently, Nigeria and Uganda are exploring the constitutional, legal, and ethical dimensions of the digital health activities by public health laws, data protection regulations, and children's rights frameworks[14]. Although the mentioned laws have been formulated primarily to regulate general health care or data management, they still fall short of meeting the needs of children, who are the most vulnerable in digital health environments[15]. The lack of regulations specifically covering digital healthcare for children has led to ambiguity regarding issues such

[11] Paul Atagamen Aidonojie, Oluwaseye Oluwayomi Ikubanni, Nosakhare Okuonghae, and Adefisayo Ifeoluwa Oyedeji. "The Challenges and Relevance of Technology in Administration of Justice and Human Security in Nigeria: Amidst the COVID-19 Pandemic." *Cogito* 13, no. 3 (September 1, 2021): 149–171; https://doi.org/10.5281/zenodo.5517423

[12] Sharifah Sekalala, Belinda Rawson, and Pamela Andanda. "A Socio-Legal Critique of the Commercialization of Digital Health in Sub-Saharan Africa." *Policy Studies* (2025): 1–21.

[13] Adil Al Ghamdi, "Online Safety Challenges: Saudi Children and Parents' Perspectives on Risks and Harms," *Social Sciences* 14, no. 9 (September 2025): 551, https://doi.org/10.3390/socsci14090551.

[14] Suzanne N. Kiwanuka, Ziyada Babirye, Steven N. Kabwama, Andrew K. Tusubira, Susan Kizito, Rawlance Ndejjo, Marc Bosonkie, Landry Egbende, Berthold Bondo, Mala Ali Mapatano, Ibrahima Seck, Oumar Bassoum, Mamadou M. M. Leye, Issakha Diallo, Olufunmilayo I. Fawole, Segun Bello, Mobolaji M. Salawu, Eniola A. Bamgboye, Magbagbeola David Dairo, Ayo Steven Adebowale, Rotimi F. Afolabi, and Rhoda K. Wanyenze. "Health Workforce Incentives and Dis-incentives during the COVID-19 Pandemic." *BMC Health Services Research* 24, no. 1 (2024): 422, https://doi.org/10.1186/s12913-024-10738-0; Mutabazi Dominic and Hilary Nwaechefu, "Leveraging Digital Technologies to Strengthen Compliance with International Human Rights Standards in Uganda," *Kampala International University Law Journal* 7, no. 2 (2025): 94–108, https://doi.org/10.59568/KIULJ-2025-7-2-07.

[15] Paul Atagamen Aidonojie, Joseph Nwazi, and Ugiomo Eruteya. "The Legality, Prospect, and Challenges of Adopting Automated Personal Income Tax by States in Nigeria: A Facile Study of Edo State." *Cogito* 14, no. 2 (June 1, 2022) https://doi.org/10.5281/zenodo.6643113.

as accountability, parental authorisation, cross-border data processing, and ethical safeguards.

Recent scholars have shown growing interest in digital innovation for maternal and child health (MCH) research across Nigeria and other African countries. Yahaya et al.[16] explain how mHealth, AI and blockchain technology can transform immunisation delivery and prenatal care services and maternal education programs, but they identify existing infrastructure problems and literacy obstacles. Owoyemi et al.[17] examine how Nigerian digital health startups experience ethical governance deficits, which create conflicts between data sovereignty and consent requirements and the implementation of ethical protections. Egwudo et al.[18] Identify operational difficulties that organizations experience when trying to implement digital health solutions, which occur because of their need for training, infrastructure and community participation. Rinke de Wit et al.[19] present regional research that demonstrates Africa's strength in using digital systems, while Keddy et al[20] and Ogwu and Izah[21] investigate ethical issues that arise from data privacy protection and fairness, and technological solutions. The research examines public

[16] Hafsat Yahaya, Abbas Bashir Umar, Ifejika Rosemary Chijioke, Ibitamuno Ehizemwogie, and Taiwo Oluwaseun Sokunbi, "Digital Innovation in Maternal and Child Health in Nigeria: Impacts, Challenges and Opportunities A Perspective," *BioSocial Health Journal* 2, no. 2 (2025): 44–49, https://doi.org/10.34172/bshj.69.

[17] Ayomide Owoyemi, Eugeniah Arthur, Tope Ladi-Akinyemi, Yemisi Babalola, and Damian Okaibedi Eke, "Trustworthy AI in Healthcare: Exploring Ethics in Digital Health Technologies in Nigeria," in *Trustworthy AI: African Perspectives* (2025), 193–206, https://doi.org/10.1007/978-3-031-75674-0_9.

[18] Adaeze E. Egwudo et al., "Integrating Digital Health Technologies into the Healthcare System: Challenges and Opportunities in Nigeria," *PLOS Digital Health* 4, no. 7 (2025): e0000928, https://doi.org/10.1371/journal.pdig.0000928.

[19] Tobias F. Rinke de Wit et al., "Digital Health Systems Strengthening in Africa for Rapid Response to COVID-19," *Frontiers in Health Services* 2 (2022): 987828 https://doi.org/10.3389/frhs.2022.987828.

[20] Karen H. Keddy et al., "Using Big Data and Mobile Health to Manage Diarrhoeal Disease in Children in Low- and Middle-Income Countries: Societal Barriers and Ethical Implications," *The Lancet Infectious Diseases* 22, no. 5 (2022): e130–e142, https://doi.org/10.1016/S1473-3099(21)00547-8.

[21] Matthew Chidozie Ogwu and Sylvester Chibueze Izah, "Challenges and Ethical Considerations in Technological Interventions in the Management of Tropical Diseases," in *Technological Innovations for Managing Tropical Diseases* (2025), 309–327, https://doi.org/10.1007/978-3-031-82622-1_13.

health and innovation approaches, but it does not provide an in-depth analysis of Nigeria and Uganda's legal protections for children.

Concerning the above, it suffices to state that a research gap exists, as no legal and ethical comparison study has examined digital health systems for childcare in both Nigeria and Uganda. The existing literature focuses on two main areas, which are technological efficiency and challenges to implementation and ethical considerations, but it fails to explore how constitutional protections for children and data protection laws and health regulations work together to protect children in digital environments. The research area between Nigeria and Uganda requires further development to examine how these two countries handle enforcement capabilities, user consent, and mechanisms for holding parties responsible. The research makes an original contribution by developing a child-centred normative framework that combines human rights law with bioethics and digital governance principles. The study establishes practical legal reform recommendations to enhance privacy protections, best-interest criteria, and institutional control mechanisms through its systematic comparison between the two jurisdictions.

In view of this, this study examines the legal and ethical issues and challenges of child digital healthcare systems in Nigeria and Uganda. The issue is the widening gap between rapid technological adoption and the slow development of legal and ethical protections sensitive to children. Consequently, the goal of this study is to critically evaluate existing laws and ethical standards, identify regulatory gaps, and recommend reforms that ensure the digital transformation of child healthcare prioritises the protection, dignity, and best interests of the child.

Methods

The study combines both qualitative research methodology using a doctrinal method of legal research and comparative legal methodology that involves the

analysis of primary sources[22], such as constitutions, statutes, regulations, and policy guidelines and secondary sources, such as books, journal articles, and reports. These primary legal sources are therefore presented in a diagrammatic flow below:

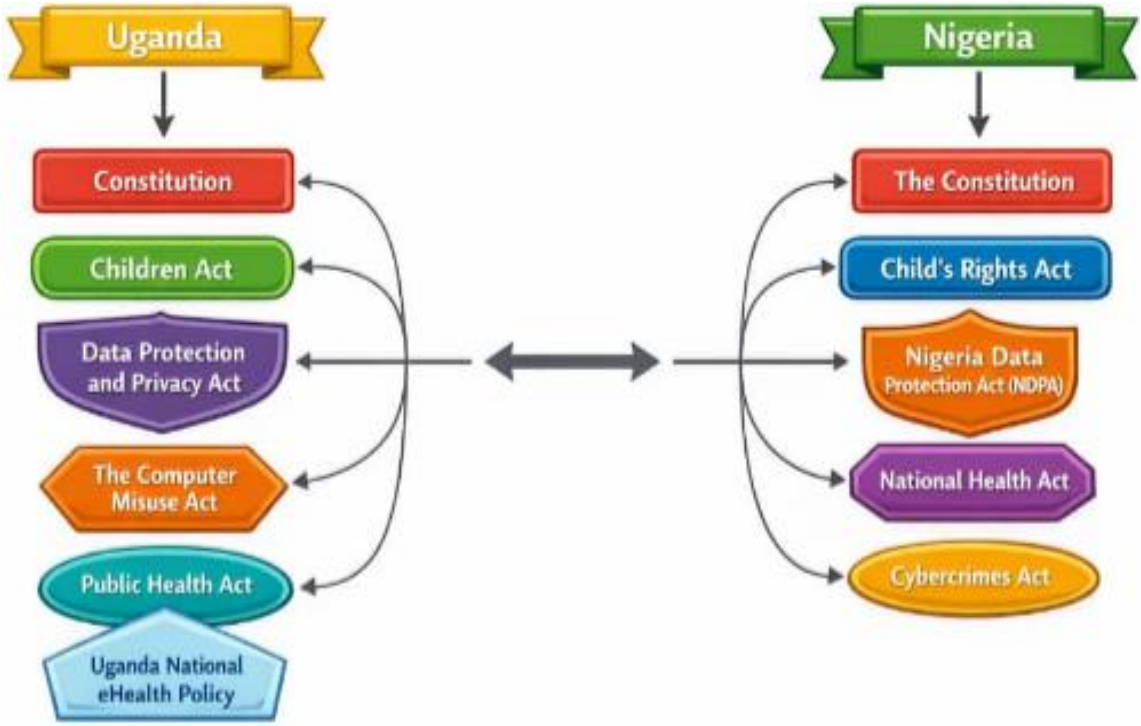


Figure 1: Legal Framework on Child Digital Healthcare System
Source: Design by authors based on data obtained

Moreover, secondary sources such as peer-reviewed journals, textbooks, and reports[23] on child digital health governance were consulted through academic databases like Google Scholar, HeinOnline, Scopus base journal and JSTOR. The specified inclusion criteria highlighted connections to child healthcare, digital health regulation, legal and ethical standards, and jurisdictional applicability, with Nigeria and Uganda as the main priorities. The total amount of data collected from secondary research sources is shown in the bar chart below:

[22] Peter De Cruz, *Comparative Law in a Changing World*, 3rd ed. (London: Routledge-Cavendish, 2024), https://doi.org/10.4324/9781003576082.
[23] Günter Frankenberg, "Critical Comparisons: Re-Thinking Comparative Law," in *Legal Theory and the Legal Academy*, 1st ed., by MaksymilianDel Mar, ed. Maksymilian Del Mar, William Twining, and Michael Giudice (Routledge, 2017), 245–89, https://doi.org/10.4324/9781315091907-13.

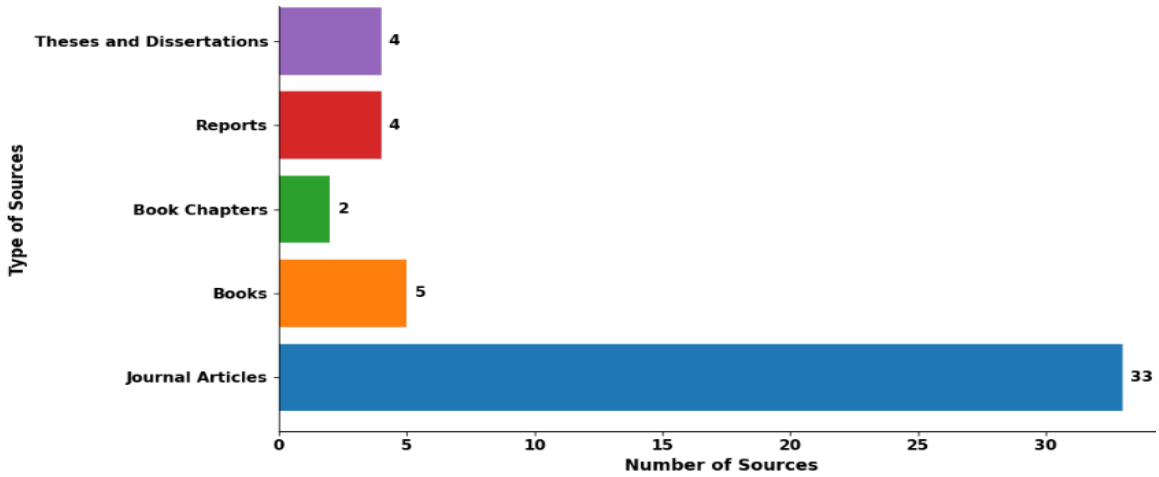


Figure 2: Distribution of Secondary Research Sources
Source: Design by authors based on data obtained

The selected materials were then subjected to statutory interpretation, comparative legal analysis, and ethical reflection to determine if the existing legal frameworks were capable of addressing children's vulnerabilities in digital healthcare systems. Among the issues discussed were consent, data protection, privacy, parental authority, professional accountability, and enforcement mechanisms. A comparative analysis was conducted to highlight similarities and differences in both Nigeria and Uganda. This method brought analytical rigor, minimized selection bias, and provided a systematic basis for suggesting legal and ethical reforms most suitable for digital healthcare governance, with a focus on children.

Discussion

Theoretical and Ethical Framework on Childcare Digital Health System

The digital transformation in Nigeria and Uganda has a significant impact on the delivery of child healthcare services, and among the most noteworthy developments are the use of e-Pediatric health records, tele-paediatrics, mobile health apps and data-based diagnostic platforms. These advancements are gradually addressing the issues pediatric healthcare has faced for years, such as inadequate recordkeeping and a shortage of specialists, while also making new methods of

diagnosing and treating children accessible to families in remote areas[24]. However, the lab-to-market approach presents a range of legal and ethical problems for which appropriate solutions should be provided, the major ones being consent, data privacy, cybersecurity, and parental rights. Therefore, it is essential to recognise these difficulties and to create thorough systems that not only protect children's rights but also ensure the efficient delivery of digital health services[25]. Hence, several theories and ethical guides seem to substantiate the need for effective protection of children in a digital healthcare system.

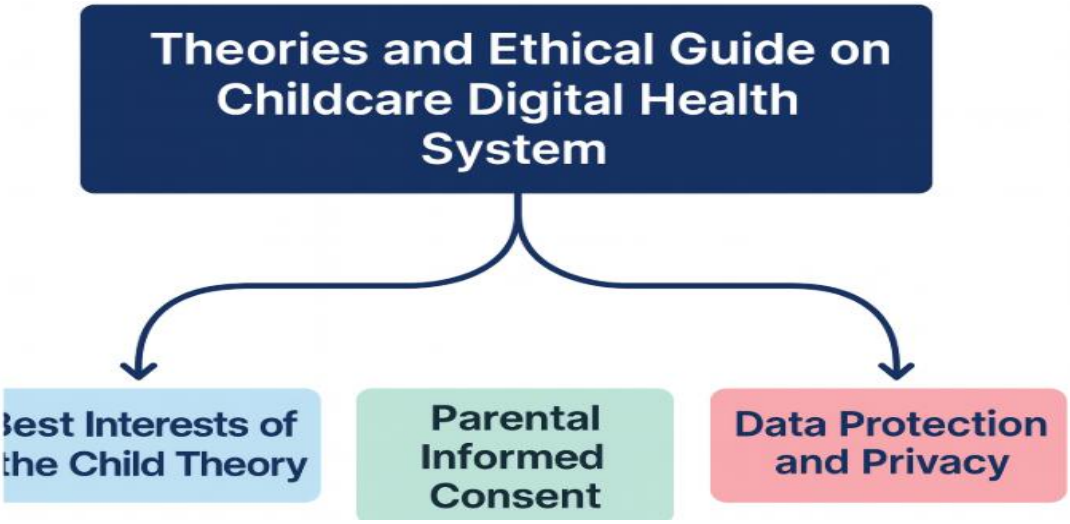


Figure 3: Theories and ethical guidelines on the childcare digital health system
Source: Design by the authors based on data obtained

The Best Interests of the Child theory is not only a major legal and policy tool in the field of children's rights but also a significant factor in the regulation of child digital healthcare systems in Nigeria and Uganda. The base of this theory can be

[24] Paul Atagamen Aidonojie, Odojor Oyenmwosa Anne, and Odetokun Olukayode Oladele. "An Empirical Study of the Relevance and Legal Challenges of an E-Contract of Agreement in Nigeria." *Cogito* 12, no. 3 (September 1, 2020) https://doi.org/10.5281/zenodo.4075416.
[25] Segun Bello, Rachel Neill, Ayodele S. Jegede, Eniola A. Bamgboye, Mobolaji M. Salawu, Rotimi Felix Afolabi, Charles Nzelu, Ngozi Azodo, Anthony Adoghe, Munirat Ogunlayi, Saudatu Umma Yaradua, William Wang, Anne Liu, and Olufunmilayo I. Fawole. "Health Systems Challenges during the COVID-19 Pandemic." *BMC Health Services Research* 24, no. 1 (2024): 625, https://doi.org/10.1186/s12913-024-10890-7; Priyanacy Gupta, "An Empirical Study on Indian Cybercrime Laws for the Protection of Senior Citizens of Indore City," *Kampala International University Law Journal* 7, no. 2 (2025): 1–13, https://doi.org/10.59568/KIULJ-2025-7-2-01.

found in international legal documents such as the UN Convention on the Rights of the Child (CRC)[26], which claims that the interests of kids, regardless of the action's source (government, healthcare provider, or digital platform), must be the highest[27]. This theory in digital health sets the postulate that the new technologies must not only ensure the physical, mental, and informational health of children but also their full development. It is here that the conflict among technologies regarded as safe, as well as the collection of sensitive pediatric data without adequate protective measures, results in a legal and ethical dilemma in digital health systems[28]. Regulatory bodies are compelled by this theory to come up with rules regarding child-specific data protection, consent mechanisms, and accountability standards that will ensure that the digital healthcare solutions actually serve the best interests of children in Nigeria and Uganda.

The ethical principle of informed consent, combined with parental responsibility, is at the forefront of regulating child digital health care systems[29]. Since minors usually lack the legal ability to make medical choices on their own, parents or legal guardians usually give consent, although older children may be allowed to give a small approval. In the health care digital environment like tele-paediatrics, mobile health applications, and electronic health records, this principle is complicated because of the constant data collection, algorithm-based decision-making, and data being processed across borders[30]. Parents being poorly informed

[26] Adopted November 20, 1989. Entered into force September 2, 1990. 1577 UNTS 3

[27] Sarah Skeen, Marguerite Marlow, Stefani du Toit, G. J. Melendez-Torres, Lynette Mudekunye, Edwick Mapalala, Kelvin Ngoma, Byamukama Michael Ntanda, Moroesi Maketha, Caitlin Grieve, Laura Hartmann, Sarah Gordon, and Mark Tomlinson. "Using WhatsApp Support Groups to Promote Responsive Caregiving." *Digital Health* 9 (2023): 56–71, https://doi.org/10.1177/20552076231163479.

[28] Paul Atagamen Aidonojie, Nosakhare Okuonghae, Aisha Najjuma, Omobolanle Omolola Ikpotokin, and Eregbuonye Obieshi. "Legal and Socio-Economic Challenges of E-Commerce in Uganda: Balancing Growth and Regulation." *Trunojoyo Law Review* 7, no. 1 (January 10, 2025): 1–32, https://doi.org/10.21107/tlj.v7i1.22906.

[29] Sydney Garfinkel, Erin Ingle, Aparna Seth, Priyanka Shrestha, Akhtar Badshah, and Rena Patel. "Gender and the Primary Health Care System." *Gates Open Research* 7 (2023): 60, https://doi.org/10.12688/gatesopenres.14846.1.

[30] Paul Atagamen Aidonojie, Antai Owoche, Yusuf Abass Aleshinloye, Khadija Ibrahim Maifada, Babirye Resty, "The prospect, legal, and medical issues in integrating AI in medical practice in

about the storage, sharing, and third-party usage of their child's data constitutes a scenario that raises ethical questions. In both the Nigerian and Ugandan contexts, the absence of clearly defined child-specific digital consent standards leads to a situation where ethical compliance is reduced[31]. This guide emphasises the need for information to be tailored to the different age groups and the importance of making the parental approval processes clear, as well as organising the kind of protections that acknowledge children's growing ability to participate in the decision-making surrounding digital health that is happening.

The Data Protection and Privacy theory highlights the protection of personal data as a fundamental human right, which is very crucial in children's digital healthcare systems, where the data's sensitivity is very high[32]. Children's medical data, starting from immunisation records and other health record, if not properly controlled, could have effects that last for the child's whole lifetime. Theory calls for extremely tough limitations on the whole data cycle, i.e., collection, processing, storage and dissemination, implementing methods such as data minimisation, purpose limitation and security[33]. Both Nigeria and Uganda have enacted general data protection regulations; however, such laws often lack child-specific provisions in the context of digital healthcare[34]. The dilemma of morality is where the digital industry opts for the path of innovation or that of commercial interests over

Uganda", *Kampala International University Law Journal* Vol. 6, Issue 2 (2024), 189-203, https://doi.org/10.59568/KIULJ-2024-6-2-10.

[31] Ogochukwu Udenigwe. *Social Norms and Power Structures: Exploring Mobile Health Technologies for Maternal Healthcare in Nigeria*. PhD diss., University of Ottawa, 2023, http://dx.doi.org/10.20381/ruor-29625.

[32] Oluwaseun Ireti Obasola, Iyabo Mabawonku, and Ikeoluwa Lagunju. "A Review of e-Health Interventions for Maternal and Child Health in Sub-Saharan Africa." *Maternal and Child Health Journal* 19, no. 8 (2015): 1813–1824, https://doi.org/10.1007/s10995-015-1695-0.

[33] Paul Atagamen Aidonojie, Esther Chetachukwu Aidonojie, Obieshi Eregbuonye, Saminu Wakili Abacha, and Mercy Okpoko. "Prospect, Legal, and Health Risks in Adopting the Metaverse in Medical Practice: A Case Study of Nigeria." Jurnal Hukum dan Peradilan 13, no. 3 (November 30, 2024): 483–522, https://doi.org/10.25216/jhp.13.3.2024.483-522.

[34] Sharon R. T. Chilunjika and Dominique E. Uwizeyimana. "Blockchain Technology for Health Information Management." *Insights into Regional Development* 6, no. 1 (2024): 59–73, https://doi.org/10.9770/IRD.2024.6.1(4).

children's privacy[35]. The theory requires the imposition of strict legal protection, the deployment of sophisticated cybersecurity technologies, and the establishment of institutional accountability to ensure that children's digital health data are not misused, compromised, or handled unethically[36].

Among the proposed solutions to the legal and ethical issues in digital health data of children are Best Interests of the Child theories, informed consent, and data protection. Child-specific laws, parental and professional accountability and privacy protection are the prerequisites for the digital healthcare systems in Nigeria and Uganda to be moral, secure and productive.

Childcare Digital Health System in Nigeria and Uganda

Technology must take care of the kid, and not put their childhood at risk. This was the saying which, during the last two years, and mainly due to the COVID-19 pandemic, highlighted the idea of a Child Digital Healthcare System (CDHS) in Nigeria and Uganda as an extraordinary answer to the issues of the classic healthcare for kids[37]. However, it suffices to state that before the incorporation of the CDHS, the traditional healthcare delivery system for children in Nigeria and Uganda is still plagued by geographical challenges[38], a shortage of qualified doctors, poor recordkeeping, and a lack of a centralised referral system[39]. The situation has

[35] Tobias F. Rinke de Wit, Wendy Janssens, Maxwell Antwi, Emmanuel Milimo, Nick Mutegi, Heri Marwa, Njide Ndili, Wasunna Owino, Emma Waiyaiya, Diana C. Garcia Rojas, Monique Dolfing, Aafke de Graaff, Ruan Swanepoel, Mark H. van der Graaf, Dorien Mulder, Teresa De Sanctis, Santa Kratule, Cem Koyuncu, Khama Rogo, Gloria P. Gómez-Pérez, and Nicole Spieker. "Digital Health Systems Strengthening in Africa for Rapid Response to COVID-19." *Frontiers in Health Services* 2 (2022): 987828, https://doi.org/10.3389/frhs.2022.987828.

[36] Emeka Chukwu, Lalit Garg, Nkiruka Obande-Ogbuinya, and Vijay Kumar Chattu. "Standardizing Primary Health Care Referral Data Sets in Nigeria." *JMIR Formative Research* 6, no. 7 (2022): e28510, https://doi.org/10.2196/28510.

[37] Chigozie J. Uneke, Issiaka Sombie, Namoudou Keita, Virgil Lokossou, Ermel Johnson, and Pierre Ongolo-Zogo. "Improving Maternal and Child Health Policymaking Processes in Nigeria." *Health Research Policy and Systems* 15, suppl. 1 (2017): 48, https://doi.org/10.1186/s12961-017-0210-3.

[38] Ben Twinomugisha. *Fundamentals of Health Law in Uganda*. Kampala: Pretrial University Law Press, 2015, https://www.pulp.up.ac.za/catalogue/monographs/fundamentals-of-health-law-in-uganda.

[39] Elliot Mbunge, Richard C. Millham, Maureen Nokuthula Sibiya, and Sam Takavarasha Jr. "Leveraging Mobile Phones to Improve Malaria Healthcare Service Delivery." *Behaviour & Information Technology* (2024): 1–14, https://doi.org/10.1080/0144929X.2024.2335841.

partly contributed to the ineffectiveness of children's diseases being ineffective in terms of treatment, not getting a diagnosis, and even immunizations being delayed, among others[40]. The Child Digital Health System (CDHS) assists in resolving these matters by using digital health record storage, telemedicine quick consultations, and real-time health monitoring of the kids[41]. The CDHS is the digital technology used in children's healthcare, which is performed by means of telemedicine, eHealth records, mHealth, and monitoring devices to make healthcare available for children[42]. The digital health system for children aims at improving access, quality, and continuity of care, especially where health infrastructure is insufficient, specialist pediatric services are not available, and health accessibility challenges exist for those residing in remote areas[43].

The use of technology is crucial in this new approach since the Children's Digital Health System (CDHS) not only breaks down the geographical barrier, but[44], at the same time, increases the accuracy of the diagnosis and guarantees prompt treatment in cases of children's health problems[45]. CDHS's implementation, in

[40] Erma Rusdiana, Paul Atagamen Aidonojie, Muwaffiq Jufri, Hassan Ismaila, and Nathan Ibrahim. "Augment Legal Efforts through Artificial Intelligence in Curtailing Economic Fraud in Nigeria: Issues and Challenges." Indonesian Journal of Criminal Law Studies 10, no. 1 (May 15, 2025): 115–148, https://doi.org/10.15294/ijcls.v10i1.84572.

[41] Genet Tadese Aboye, Martijn Vande Walle, Gizeaddis Lamesgin Simegn, and Jean-Marie Aerts. "mHealth in Sub-Saharan Africa and Europe." *Digital Health* 9 (2023), https://doi.org/10.1177/20552076231163892.

[42] Gloria Ejehiohen Iyawa, Suama Hamunyela, Anicia Peters, Samuel Akinsola, Irja Shaanika, Benjamin Akinmoyeje, and Sinte Mutelo. "Digital Transformation and Global Health in Africa." In *Handbook of Global Health*, 137–167. Cham: Springer, 2021, https://doi.org/10.1007/978-3-030-05325-3_6.

[43] Christine Zhenwei Qiang, Masatake Yamamichi, Vicky Hausman, and Daniel Altman. *Mobile Applications for the Health Sector*. Washington, DC: World Bank, 2011, https://doi.org/10.1596/978-0-8213-8638-0.

[44] Graham Connelly and Saater Ikpaahindi. *Alternative Child Care and Deinstitutionalisation: A Case Study of Nigeria*. Brussels: European Commission, 2017, https://strathprints.strath.ac.uk/61136/1/Connelly_Ikpaahindi_2016_Alternative_child_care_and_deinstitutionalisation_a_case_study_of_Nigeria.pdf.

[45] Emma Gillette, Winstone Nyandiko, Ashley Chory, Michael Scanlon, Josephine Aluoch, Nandini Choudhury, Daniel Lagat, Celestine Ashimosi, Whitney Biegon, Dennis Munyoro, Janet Lidweye, Jack Nyagaya, Ilene Wilets, Allison DeLong, Rami Kantor, Rachel Vreeman, and Violet Naanyu. "Ethical Considerations for Engaging Children Living with HIV in Research." *Journal of Empirical Research on Human Research Ethics* 18, no. 5 (2023): 346–362, https://doi.org/10.1177/15562646231184074.

particular, greatly opens up a spectrum of innovation in data-driven healthcare[46]. For example, through electronic health records and health information systems, the healthcare practitioners could acquire and perform a massive-scale analysis of children's data to highlight the trends, monitor the spread and make policies for the public health sector[47]. In Nigeria, rural tele-paediatrics has been the avenue through which the entire healthcare system tried to remedy the issue of specialist doctors' access being limited to only the affluent[48]. Likewise, Uganda has been testing mobile health applications that put parents and caregivers in control by enabling them to find, book and get reminders for children's health services like growth monitoring and vaccinations, etc[49]. The aforementioned developments are seen as a precursor to what is achievable with CDHS if appropriate healthcare infrastructure and the right research implementation protocols are in place.

On the other hand, the introduction of CDHS in both nations is met with legal and ethical issues, which create complications. Among the legal issues are those related to minors' rights, confidentiality of health records, the authority of parents or guardians, and the lack of specific laws on CDHS[50]. Thus, health care workers might misuse or illegally expose children's health data, and the parents or guardians

[46] Hassan Ismaila Adebowale, Ahmad Mohamed, Chukwuemeka Odi Agwu, Habib Shehu, Chima Magnus, Damina Joshua John & Yasein Hassan N. Osman, "Intellectual property law and artificial intelligence in Uganda: Trending issues and future prospects", Kampala International University Law Journal Volume. 6, Issue 2 (2024), 224-240, https://doi.org/10.59568/KIULJ-2024-6-2-12.

[47] John Batani and Manoj Sewak Maharaj. "Towards Data-Driven Models for Maternal, Neonatal and Child Health Services." *Global Health Journal* 6, no. 4 (2022): 183–191 https://doi.org/10.1016/j.glohj.2022.11.004.

[48] Karen H. Keddy, Senjuti Saha, Samuel Kariuki, John Bosco Kalule, Farah Naz Qamar, Zoya Haq, and Iruka N. Okeke. "Using Big Data and Mobile Health to Manage Diarrhoeal Disease in Children in Low- and Middle-Income Countries." *The Lancet Infectious Diseases* 22, no. 5 (2022): e130–e142, https://doi.org/10.1016/S1473-3099(21)00547-8.

[49] Juliet Nabbuye Sekandi, Kenya Murray, Corinne Berryman, Paula Davis-Olwell, Caroline Hurst, Robert Kakaire, Noah Kiwanuka, Christopher C. Whalen, and Erisa Sabakaki Mwaka. "Ethical, Legal, and Sociocultural Issues in the Use of Mobile Technologies and Call Detail Records Data for Public Health in East Africa." *Interactive Journal of Medical Research* 11, no. 1 (2022): e35062, https://doi.org/10.2196/35062.

[50] Lawrence O. Gostin and Benjamin Mason Meier. *Global Health Law and Policy: Ensuring Justice for a Healthier World*. Oxford: Oxford University Press, 2023, https://doi.org/10.1093/oso/9780197682993.001.0001.

might be confused about their rights and duties in the digital healthcare situation[51]. In this regard, it suffices to state that the incorporation of the CDHS IN Uganda and Nigeria should securely manage data, enable consent processes that are user-friendly, accommodating and set high standards of ethical guidelines for the digital health industry[52]. In this, it will be relevant to consider some of the laws in Nigeria and Uganda as it concerns CDHS and to what extent they could be harnessed in securing and protecting the child in a digitalise healthcare system.

Legal Framework on Childcare Digital Health System in Nigeria and Uganda

When medicine goes digital, the law must grow wiser especially where children are the patients. I t suffices to state that the 1995 Constitution of the Republic of Uganda[53] is the main legal basis for child healthcare, and it can also be applied to digital contexts through purposive interpretation. The State is mandated by Objective XIV of the National Objectives and the Directive Principles of State Policy[54] to ensure that the health care services are accessible to all Ugandans, which is a mandate corresponding to the digital adoption of technologies for pediatric healthcare. More in detail, is Article 34(3)[55] which establishes the right to basic medical care for every child; hence, state-promoted activities such as telemedicine, electronic records for child health and digital immunization monitoring can be considered as the modern ways of discharging this duty. Moreover, Article 27 of the Constitution[56] ensures the right to privacy, which includes correspondence and communication, and this is of utmost importance in securing the confidentiality of

[51] World Health Organization. *Health Technology Assessment of Medical Devices*. Geneva: WHO, 2025, https://iris.who.int/server/api/core/bitstreams/68a45b5a-97a6-44e1-b3bf-8cb39cc460f3/content.
[52] Moses Galukande, Joachim Schüz, Benjamin O. Anderson, Annelle Zietsman, Charles Adisa, Angelica Anele, Groesbeck Parham, Leeya F. Pinder, Songiso Mutumba, Dorothy Lombe, Anna Cabanes, Milena Foerster, Isabel dos-Santos-Silva, and Valerie McCormack. "Maternally Orphaned Children and Intergenerational Concerns." *JAMA Oncology* 7, no. 2 (2021): 285–289, https://doi.org/10.1001/jamaoncol.2020.6763.
[53] 1995 Constitution of the Republic of Uganda
[54] Ibid
[55] Ibid
[56] Ibid

children's electronic medical records and telemedicine consultations. In such a healthcare system, this provision imposes a constitutional obligation upon the State and healthcare providers to take all necessary measures to protect children's health data from unauthorized access, disclosure or misuse. Still, the Constitution does not deal with digital health technologies or the specific risks of children in the digital healthcare system directly, though these guarantees are important. Thus, the application of the Constitution to a digital child healthcare system is still indirect and depends more on the evolving interpretation of judicial and policy than on clear constitutional guidance.

The Children Act of Uganda[57] provides a very positive, legally binding framework for digital healthcare with children through a child-centred approach. At the heart of this Act is the welfare principle stated in Section 3[58], which demands that the children's best interests are to be the primary factor throughout all children's affairs. This principle defines in an ethical way the digital healthcare systems, wherever they are, as the means of getting the patients, diagnosing the diseases early, and contributing positively to health outcomes. Furthermore, Section 5 grants every child a basic health care right, thereby putting the State and the parents under the obligation to make sure that e-health platforms and telemedicine services, among others, are the means of performing such obligations. Section 4(g)[59] fortifies children's rights to protection, non-interference, information, and social services, which are automatically extended to the safeguarding of children's health data in virtual worlds. Even more, Section 7 lays down the responsibility of parents and guardians in healthcare matters, which is very much linked to granting consent for digital health services and allowing the handling of children's health data. However, the Act, while it establishes strong principles for child protection, does not cover the digital health care delivery or the data-based health technologies at all.

[57] Children Act of Uganda (Cap. 59, as amended)
[58] Children Act of Uganda (Cap. 59, as amended)
[59] Children Act of Uganda (Cap. 59, as amended)

Therefore, the digitalized child health care system is governed by the Act's application but not explicitly regulated.

Also, the statutory and policy instruments of Uganda are not only backing but also facilitating child digital healthcare. The Public Health Act[60] provides for the protection of public health and control of diseases, as the state has another obligation under Section 5. The obligation of the state is increasingly met through the implementation of digital technologies like disease surveillance, reporting, and child immunisation databases. The sickness notification provisions from Sections 10–15 are being particularly complemented by modern technologies that allow reporting and tracking of childhood diseases to be done in a timely manner. In a more direct way, the Data Protection and Privacy[61] regulate children's digital health data explicitly. Sections 7 and 8 lay down the principles of lawful, fair, and secure processing of data, while Sections 19 and 28 make it mandatory to obtain parental consent and to apply stringent security measures for electronic medical records of children. Moreover, the Computer Misuse Act[62] is a significant safeguard for digital health systems against cyber-attacks through the criminalisation of unauthorised access, electronic fraud, and unlawful interception under Sections 12, 16, and 22. The National eHealth Policy[63], while lacking child-specific digital provisions, but addresses the use of ICT in health service delivery in general, which encompasses maternal and child health. To conclude, the different legal and policy frameworks constitute a conducive atmosphere for the integration of technology in the health sector. However, the existing laws and policies do not expressly establish a comprehensive legal regime for a digitalised child healthcare system which should be treated as a special case just like the Child Rights Act which secure the right of a child.

[60] The Public Health Act (Cap. 281)
[61] Data Protection and Privacy Act of 2019
[62] the Computer Misuse Act 2011
[63] The National eHealth Policy 2016

The legal and ethical framework of Nigeria for child digital healthcare is a mix of constitutional guarantees and child-oriented legislation. Privacy for all citizens is secured by the 1999 Constitution of the Federal Republic of Nigeria[64], Section 37[65]. This provision literally encompasses children's digital health records, telemedicine communications, and electronic medical files. It is also Section 17(3)(d) and (f)[66] that the State must protect children from exploitation and neglect, and the State will provide health facilities of good quality. The above provisions may not specifically refer to technology, but they certainly set a standard for respecting what must be provided by digital health systems. The Child Rights Act (CRA) 2003[67] reinforces this protection and makes the concept of the best interest of the child to be the primary consideration in all actions (s.1). Sections 8 and 11[68] go so far in protecting the child's privacy and dignity as to require digital healthcare platforms to avoid degrading, exploitative or unsafe practices. The CRA Section 15 recognises the importance of parental care and protection and thus provides a legal ground for parental consent in digital health decisions. All these provisions not only alleviate the ethical issues of autonomy, dignity, and privacy but also pose a problem: the absence of specific legislation for technological innovations makes it hard for courts and regulators to interpret the law, which in turn leads to uncertainty in its implementation and practice.

Besides being a constitutional and child rights safeguard, the National Health Act (NHA)[69] lays down detailed rules on health care delivery, which apply to digital contexts, thus providing an establishment for legal rights protection and child rights promotion through healthcare accessibility. Every human being, including kids, is granted the right to the best attainable state of physical and mental health by Section 1, which is a principle that is increasingly being realized through telemedicine and

[64] Constitution of the Federal Republic of Nigeria as amended 1999
[65] Constitution of the Federal Republic of Nigeria as amended 1999
[66] Constitution of the Federal Republic of Nigeria as amended 1999
[67] Child's Rights Act (2003)
[68] Child's Rights Act (2003)
[69] National Health Act (NHA) 2014

digital monitoring systems. Section 23[70] Consent is of great importance as it stipulates that the patient must give informed consent before medical treatment is administered; thus, the consent of the parent or guardian is a prerequisite for digital healthcare to be given to children, in addition to the agreement if the minor is mature enough. The determination of how consent is taken on online platforms causes ethical difficulties, particularly when there are issues of literacy or lack of access. Moreover, the privacy of health information is guaranteed for the patients by Section 26[71]; thus, the protection of electronic child health records and digital consultations is also covered by the law. Section 48 deals with the practice of using humans in health research and places the requirement for ethical approval and precautions where children's digital health data are used for research. Although NHA is silent on the issue of digital healthcare systems, its principles have enshrined the duties of care, confidentiality and ethical oversight. The difficulty is in drawing these old health law standards along with the fast-paced digital environment, without the benefit of detailed statutory or regulatory guidance specifically tailored to children.

The primary governing legislation regarding children's digital healthcare in Nigeria is the Nigeria Data Protection Act (NDPA)[72], which sets up enforceable regulations for the handling of children's health data. The Act has been interpreted in a way that its provisions apply to both digital and non-digital platforms, health institutions, and electronic archiving. This ensures that telemedicine and child health applications are operating under the same regulations. The Act lays down the fundamentals of data protection in general, such as legality, limitation to processing and storage, correctness, and confidentiality, and at the same time it puts a responsibility and accountability on data handlers. But of great importance is the fact that Section 30[73] regards health data as sensitive personal data requiring the

[70] National Health Act (NHA) 2014
[71] National Health Act (NHA) 2014
[72] Nigeria Data Protection Act (NDPA) 2023
[73] Nigeria Data Protection Act (NDPA) 2

provision of consent and increased safeguards as the major ethical concern when dealing with children. Parental consent and the public interest in the area of public health are among the lawful grounds of processing mentioned in Section 25. The securities provided to the children are further strengthened by the Cybercrimes (Prevention, etc.) Act. Act 2015, which forbids and punishes unlawful access (s.14), data tampering (s.23), and hacking into critical health infrastructure (s.6). Although these regulations together cover data security and cyber-risk, obstacles remain in the areas of enforcement capacity, institutional cooperation, and public awareness, which in turn makes it easier for children to become victims of data breaches and unauthorized use of their information in digital healthcare systems.

Legal and Ethical Issues on the Regulation of Childcare Digital Health Systems in Nigeria and Uganda

In Nigeria, the issue of child digital healthcare has among its legal and ethical issues the matter of minors' health records confidentiality (though this issue is not more pronounced)[74], which is the most serious one[75]. The digital systems, such as electronic medical records that are being used for telemedicine, vaccination databases, and others, constantly require the collection[76], storage, and sharing of sensitive information about children's health as part of the process[77]. The Constitution of Nigeria, Section 37, assures the privacy rights, and the confidentiality of health information is backed by the Child Rights Act (CRA), Section 8, and the National Health Act (NHA), Section 26, also. Moreover, the Nigeria Data Protection

[74] Ivan Zziwa, Anthoinette Ilolo, Maurice Dawson, and Brian Serwadda. "Regulating Emerging Technologies: Establishing Ethical and Legal Frameworks in East Africa." In *Analyzing Privacy and Security Difficulties in Social Media*, 441–464. Hershey, PA: IGI Global, 2025, https://doi.org/10.4018/979-8-3693-2320-0.ch020.

[75] Livhuwani Tshivhase and Idah Moyo. "Ubuntu Philosophy as a Strategy to Promote Access to Under-Five Child Healthcare Services." *Curationis* 48, no. 1 (2025), https://doi.org/10.4102/curationis.v48i1.2663.

[76] Mariam Basajja, Mirjam Van Reisen, and Francisca Oladipo. "FAIR Equivalency with Regulatory Framework for Digital Health in Uganda." *Data Intelligence* 4, no. 4 (2022): 771–797, https://doi.org/10.1162/dint_a_00152.

[77] Muhammad Musa. *Using Access Control to Protect Health Information Systems*. Master's thesis, Uganda Technology and Management University, 2016, https://utamu.ac.ug/wp-content/uploads/2024/02/Using-Access-Control-to-Protecting-Health-Information-System.pdf

Act (NDPA) 2023 more clearly categorizes health data as sensitive personal data under section 30 and mandates such processing to be lawful, with explicit consent and strong security measures as per sections 24 and 34. On the other hand, Article 27 of the Constitution of Uganda assures the right to privacy, whereas the Data Protection and Privacy Act (DPPA) of 2019 describes in detail the conditions for lawful processing, consent, and security under sections 7, 8, 19, and 28. Children are viewed as the most vulnerable in an ethical sense because they are the least capable of dictating the terms of their data's usage[78]. Nonetheless, the aforementioned privacy rights are still not sufficient since neither of the two countries has developed rules for digital health specifically designed for children, given their special case and vulnerability, thus leaving room for potential data abuse, along with weak enforcement and inadequate protections in the fast-growing digital healthcare sector, which a child may not have the capacity to legally pursue when ignore by their guidiance.[79]

The issue of consent and child decision-making in digital healthcare systems is the second significant problem that has to be addressed. Nigeria and Uganda, for example, both legally acknowledge that parents and guardians are the primary decision-makers regarding children's healthcare. However, the application of digital health creates an area for complex and ethical questions regarding consent, comprehension and child participation. The Child Rights Act in Nigeria, section 15, gives the parents caretaking rights and responsibilities, whereas the National Health Act, section 23, requires that, always and everywhere, informed consent is obtained before the rendering of any health-related service, including digital ones. In this context, the NDPA 2023, sections 25 and 30 stipulate that consent is also needed to be the lawful ground for processing the health data of children. Meanwhile, the Children Act in Uganda, section 7, empowers the parents to be the ones who make

[78] Naing Bo Bo Min. *Digital Health Services in Humanitarian Response Programs*. Master's thesis, Thammasat University, 2022, https://digital.library.tu.ac.th/tu_dc/frontend/Info/item/dc:311659,
[79] Lupton, "Young People's Use of Digital Health Technologies in the Global North."

healthcare decisions concerning the children, and the DPPA 2019, section 19, also similarly requires that parental or guardian consent be obtained beforehand for the processing of a child's personal data. The ethical issues arise when parents are not digitally literate, consent is given without understanding the data risks, and older children's evolving capacity is overridden. Both legal systems address children's participation through assent, age-appropriate involvement, and digital consent mechanisms, thereby leaving many children's rights, along with their best interests, unprotected in digital healthcare settings where they are supposed to be stakeholders and beneficiaries.[80]

One more major legal and moral issue is that digital health systems must be secured for children's sake only. The Child Rights Act of Nigeria, section 1, considers the child's best interest as the main factor in all actions regarding children, and section 11 ensures the child's dignity through the prohibition of degrading or exploitative practices. Section 17(3)(d) of the Constitution requires the State to furnish the public with sufficient health facilities, thus allowing the use of digital technologies to spread access further. In Uganda, the welfare principle in section 3 of the Children Act and Article 34(3) of the Constitution, which assures a child's right to basic medical services, likewise offers a basis for digital healthcare, where it leads to better access and outcomes. The absence of proper regulation for digital health tools specifically tailored to address peculiar issues of a child, as it concern a digitalise healthcare, creates a scenario where ethics come second, children's welfare gets compromised, or the focus is on efficiency rather than quality care.[81] Without technology, unreliable digital platforms, and no professional supervision, the welfare of children may be in very much jeopardy rather than promoted. Moreover, Nigeria and Uganda have no legal standards in place concerning the

[80] Imam Ghozali et al., "Young Children's Rights in a Digital World: Play, Design and Practice: Edited by Donell Holloway, Michele Willson, Karen Murcia, Catherine Archer, Francesca Stocco, Cham, Springer, 2021, 341 Pp., £139.09 (Ebook), eISBN: 978-3-030-65916-5," *Education 3-13* 53, no. 5 (July 2025): 862–65, https://doi.org/10.1080/03004279.2023.2273908.

[81] Emma Rich and Andy Miah, "Understanding Digital Health as Public Pedagogy: A Critical Framework," *Societies* 4, no. 2 (June 2014): 296–315, https://doi.org/10.3390/soc4020296.

quality, safety, and accountability of digital child health services, which makes it really tough to trust that these systems are always complying with the best interest of the child standard.

Cybersecurity and the prevention of digital harm to children are some of the main challenges for child digital healthcare systems[82]. Digital health platforms are, in fact, the target of hackers, data breaches, and electronic fraud[83], which could easily compromise the health records of children and thus their well-being. In Nigeria, the Cybercrimes (Prohibition, Prevention, etc.) The provisions of the Act of 2015 provide criminal protection, such as section six about the critical national information infrastructure, section fourteen about the unlawful access, and section twenty-three about the computer-related forgery, all of which apply to child health databases. Uganda is also providing similar protection through the Computer Misuse Act 2011, especially sections 12 (unauthorized access), 16 (electronic fraud), and 22 (interception of electronic communications). Ethically, children are more at risk because the surge in compromised health data can lead to long-term harm, identity theft, or denial of services. The existence of these laws does not exclude problems of enforcement, limited technical capacity, and lack of child-specific cybersecurity standards. Neither jurisdiction directly embeds cybersecurity duties within a holistic child digital healthcare framework, thereby creating inherent deficiencies in protecting minors against digital harm.[84]

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[82] Ogochukwu Udenigwe, Olumuyiwa Omonaiye, and Sanni Yaya. "Gender Transformative Approaches in mHealth for Maternal Healthcare in Sub-Saharan Africa." *Frontiers in Digital Health* 5 (2023), https://doi.org/10.3389/fdgth.2023.1139274.

[83] Gloria Karungo Ngaiza. Technology Integration in Newborn Care. MSc diss., University of Oxford, 2024, https://www.researchgate.net/publication/397435114_Technology_integration_in_newborn_care_examining_communication_and_decision-making_among_health_professionals_in_Kenyan_hospitals; Wendy K. Mariner, George J. Annas, Nicole Huberfeld, and Michael Ulrich. Public Health Law. 3rd ed. New York: Wolters Kluwer, 2019. https://scholarship.law.bu.edu/books/124.

[84] Rahul Vadisetty and Anand Polamarasetti, "Regulatory Framework for Digital Health, Data Privacy, and Cybersecurity," in *Sustainable Healthcare Systems in Africa*, 1st ed., by Wasswa Shafik et al. (New York: CRC Press, 2025), 132–53, https://doi.org/10.1201/9781003530879-10.

In the case of both Nigeria and Uganda, child digital health care is not overseen by a dedicated legal framework but a mixture of different legal instruments, including constitutional provisions, child protection laws, health regulations, data protection regimes, and cybercrime legislation. These laws, though, provide certain important safeguards concerning privacy, consent, child welfare, and cybersecurity, but they do so in an indirect and fragmented manner. The absence of precise rules for digital health services for children raises ethical and legal issues, particularly regarding data protection, informed consent, quality of care, and the prevention of digital harm. Therefore, the two countries have to develop comprehensive, child-centred electronic healthcare laws or policies that are tech-savvy, legally valid, and closely aligned with the rights and best interests of the child.

Conclusion

The investigation reveals that implementing CDHS (child digital healthcare systems) in Nigeria and Uganda is a double-edged sword; the system allows better access to, more efficient, and higher-quality pediatric care, but it has also created, at the same time, very complicated legal and ethical issues. The main issues recognised include, among others, that data protection regulations are in place; however, the absence of specific regulations for children's digital health leads to misuse and inadequate protection for their health data. The parents' consent is acknowledged; however, the digital consent, child's assent, and participation are not well regulated according to the child's age. Furthermore, even though the child's best interests are considered, the lack of quality and cybersecurity standards still exposes children to digital health risks. The situation created by this combination of factors means that children will likely be the first to suffer from data breaches, unauthorized access to their private health records, and treatment errors, which in turn would only increase the digital healthcare innovations hospitals already have in place. A comparison between the two countries revealed that both Nigeria and Uganda face

similar problems but differ in their levels of regulatory development and institutional capacity, which directly affect the governance of digital health care.

The study therefore recommends that the children's rights should always be the primary concern of the digital health legal and ethical framework. Accepting this will mean the parties' consent is clearly articulated and takes into account the parents' power and the child's growing capacity. It is also required that there be very strict data protection and cybersecurity measures in place, along with institutional oversight to monitor compliance with the rules. Moreover, it would be wise to conduct Healthcare Provider and caregiver awareness programs as a good practice to foster and maintain ethical conduct, and regional and international collaboration could be a major factor in standardizing procedures and sharing best practices. Thus, both Nigeria and Uganda would be on their way to creating digital healthcare ecosystems that are safe, responsible, and efficient, while not losing sight of the children's rights and their access to quality healthcare.

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References

Abubakar Kawu, Abdullahi, et al. “FAIR Guidelines and Data Regulatory Framework for Digital Health in Nigeria.” Data Intelligence 4, no. 4 (October 2022): 839–51. https://doi.org/10.1162/dint_a_00174.

Adaji, Aishatu Eleojo. “Rethinking Biotechnology Regulation in Nigeria: The Role of Open Science and Human Rights Lessons from India.” Kampala International University Law Journal 7, no. 1 (2025): 24–39. https://doi.org/10.59568/KIULJ-2025-7-1-02.

Adebowale, Hassan Ismaila, Ahmad Mohamed, Chukwuemeka Odi Agwu, Habib Shehu, Chima Magnus, Damina Joshua John, and Yasein Hassan N. Osman. “Intellectual Property Law and Artificial Intelligence in Uganda: Trending Issues and Future Prospects.” Kampala International University Law Journal 6, no. 2 (2024): 224–240. https://doi.org/10.59568/KIULJ-2024-6-2-12.

Aidonojie, Paul Atagamen, Antai Owoche, Yusuf Abass Aleshinloye, Khadija Ibrahim Maifada, and Babirye Resty. “The Prospect, Legal, and Medical Issues in Integrating AI in Medical Practice in Uganda.” Kampala International

University Law Journal 6, no. 2 (2024): 189–203. https://doi.org/10.59568/KIULJ-2024-6-2-10.

Aidonojie, Paul Atagamen, Esther Chetachukwu Aidonojie, Obieshi Eregbuonye, Saminu Wakili Abacha, and Mercy Okpoko. "Prospect, Legal, and Health Risks in Adopting the Metaverse in Medical Practice: A Case Study of Nigeria." Jurnal Hukum dan Peradilan 13, no. 3 (November 30, 2024): 483–522. https://doi.org/10.25216/jhp.13.3.2024.483-522.

Aidonojie, Paul Atagamen, Joseph Nwazi, and Ugiomo Eruteya. "The Legality, Prospect, and Challenges of Adopting Automated Personal Income Tax by States in Nigeria: A Facile Study of Edo State." Cogito 14, no. 2 (June 1, 2022). https://doi.org/10.5281/zenodo.6643113.

Aidonojie, Paul Atagamen, Nosakhare Okuonghae, Aisha Najjuma, Omobolanle Omolola Ikpotokin, and Eregbuonye Obieshi. "Legal and Socio-Economic Challenges of E-Commerce in Uganda: Balancing Growth and Regulation." Trunojoyo Law Review 7, no. 1 (January 10, 2025): 1–32. https://doi.org/10.21107/tlj.v7i1.22906.

Aidonojie, Paul Atagamen, Odojor Oyenmwosa Anne, and Odetokun Olukayode Oladele. "An Empirical Study of the Relevance and Legal Challenges of an E-Contract of Agreement in Nigeria." Cogito 12, no. 3 (September 1, 2020). https://doi.org/10.5281/zenodo.4075416.

Aidonojie, Paul Atagamen, Oluwaseye Oluwayomi Ikubanni, and Nosakhare Okuonghae. "The Prospects, Challenges, and Legal Issues of Digital Banking in Nigeria." Cogito 14, no. 3 (September 1, 2022). https://doi.org/10.5281/zenodo.7228546.

Aidonojie, Paul Atagamen, Oluwaseye Oluwayomi Ikubanni, Nosakhare Okuonghae, and Adefisayo Ifeoluwa Oyedeji. "The Challenges and Relevance of Technology in Administration of Justice and Human Security in Nigeria: Amidst the COVID-19 Pandemic." Cogito 13, no. 3 (September 1, 2021): 149–171. https://doi.org/10.5281/zenodo.5517423.

Aidonojie, Paul Atagamen, Souad Ezzerouali, Damina Joshua John, Kajja Timothy, and Khadija Ibrahim Maifada. "Digital Technology in Complementing the Laws in Curtailing Domestic and Gender-Based Violence in Nigeria and Uganda." Kampala International University Law Journal 7, no. 1 (2025): 81–92. https://doi.org/10.59568/KIULJ-2025-7-1-06.

Akeju, David, Friederike Ziegler, Adlight Dandadzi, Elizabeth Nabirye, Eve Namisango, Elizabeth Namukwaya, Samuel O. Adejoh, Kehinde Okunade, Yu Fu, Bassey Ebenso, Kennedy Nkhoma, and Matthew Allsop. "The Use of and Need for Data and Information by Health Professionals Supporting Palliative Cancer Care Services in Sub-Saharan Africa." Health Informatics Journal 28, no. 4 (2022). https://doi.org/10.1177/14604582221140134.

Al Ghamdi, Adil. "Online Safety Challenges: Saudi Children and Parents' Perspectives on Risks and Harms." Social Sciences 14, no. 9 (September 2025): 551. https://doi.org/10.3390/socsci14090551.

Basajja, Mariam, Mirjam Van Reisen, and Francisca Oladipo. "FAIR Equivalency with Regulatory Framework for Digital Health in Uganda." Data Intelligence 4, no. 4 (2022): 771–797. https://doi.org/10.1162/dint_a_00152.

Batani, John, and Manoj Sewak Maharaj. "Towards Data-Driven Models for Maternal, Neonatal and Child Health Services." Global Health Journal 6, no. 4 (2022): 183–191. https://doi.org/10.1016/j.glohj.2022.11.004.

Bello, Segun, Rachel Neill, Ayodele S. Jegede, Eniola A. Bamgboye, Mobolaji M. Salawu, Rotimi Felix Afolabi, Charles Nzelu, Ngozi Azodo, Anthony Adoghe, Munirat Ogunlayi, Saudatu Umma Yaradua, William Wang, Anne Liu, and Olufunmilayo I. Fawole. "Health Systems Challenges during the COVID-19 Pandemic." BMC Health Services Research 24, no. 1 (2024): 625. https://doi.org/10.1186/s12913-024-10890-7.

Bucher, Sherri Lynn, Allison Young, Madison Dolan, Geetha Priya Padmanaban, Khushboo Chandnani, and Saptarshi Purkayastha. "The NeoRoo Mobile App." PLOS Digital Health 2, no. 10 (2023): e0000216. https://doi.org/10.1371/journal.pdig.0000216.

Chilunjika, Sharon R. T., and Dominique E. Uwizeyimana. "Blockchain Technology for Health Information Management." Insights into Regional Development 6, no. 1 (2024): 59–73. https://doi.org/10.9770/IRD.2024.6.1(4).

Chukwu, Emeka, Lalit Garg, Nkiruka Obande-Ogbuinya, and Vijay Kumar Chattu. "Standardizing Primary Health Care Referral Data Sets in Nigeria." JMIR Formative Research 6, no. 7 (2022): e28510. https://doi.org/10.2196/28510.

Connelly, Graham, and Saater Ikpaahindi. Alternative Child Care and Deinstitutionalisation: A Case Study of Nigeria. Brussels: European Commission, 2017. https://strathprints.strath.ac.uk/61136/1/Connelly_Ikpaahindi_2016_Alternative_child_care_and_deinstitutionalisation_a_case_study_of_Nigeria.pdf.

De Cruz, Peter. Comparative Law in a Changing World. 3rd ed. London: Routledge-Cavendish, 2024. https://doi.org/10.4324/9781003576082.

de Wit, Tobias F. R., Wendy Janssens, Maxwell Antwi, Emmanuel Milimo, Nick Mutegi, Heri Marwa, Njide Ndili, Wasunna Owino, Emma Waiyaiya, Diana C. Garcia Rojas, Monique Dolfing, Aafke de Graaff, Ruan Swanepoel, Mark H. van der Graaf, Dorien Mulder, Teresa De Sanctis, Santa Kratule, Cem Koyuncu, Khama Rogo, Gloria P. Gómez-Pérez, and Nicole Spieker. "Digital Health Systems Strengthening in Africa for Rapid Response to COVID-19." Frontiers

in Health Services 2 (2022): 987828. https://doi.org/10.3389/frhs.2022.987828.

Egwudo, Adaeze E., et al. "Integrating Digital Health Technologies into the Healthcare System: Challenges and Opportunities in Nigeria." PLOS Digital Health 4, no. 7 (2025): e0000928. https://doi.org/10.1371/journal.pdig.0000928.

Farrell, Anne-Maree, et al. Health Law: Frameworks and Context. 1st ed. Cambridge: Cambridge University Press, 2017. https://doi.org/10.1017/9781316092675.

Frankenberg, Günter. "Critical Comparisons: Re-Thinking Comparative Law." In Legal Theory and the Legal Academy, 1st ed., by MaksymilianDel Mar, 245–89. Edited by Maksymilian Del Mar, William Twining, and Michael Giudice. Routledge, 2017. https://doi.org/10.4324/9781315091907-13.

Galukande, Moses, Joachim Schüz, Benjamin O. Anderson, Annelle Zietsman, Charles Adisa, Angelica Anele, Groesbeck Parham, Leeya F. Pinder, Songiso Mutumba, Dorothy Lombe, Anna Cabanes, Milena Foerster, Isabel dos-Santos-Silva, and Valerie McCormack. "Maternally Orphaned Children and Intergenerational Concerns." JAMA Oncology 7, no. 2 (2021): 285–289. https://doi.org/10.1001/jamaoncol.2020.6763.

Garfinkel, Sydney, Erin Ingle, Aparna Seth, Priyanka Shrestha, Akhtar Badshah, and Rena Patel. "Gender and the Primary Health Care System." Gates Open Research 7 (2023): 60. https://doi.org/10.12688/gatesopenres.14846.1.

Ghozali, Imam, Nur Hidayat, Nadya Afdholy, and S. Sumihatul Ummah Ms. "Young Children's Rights in a Digital World: Play, Design and Practice: Edited by Donell Holloway, Michele Willson, Karen Murcia, Catherine Archer, Francesca Stocco, Cham, Springer, 2021, 341 Pp., £139.09 (Ebook), eISBN: 978-3-030-65916-5." Education 3-13 53, no. 5 (July 2025): 862–65. https://doi.org/10.1080/03004279.2023.2273908.

Gillette, Emma, Winstone Nyandiko, Ashley Chory, Michael Scanlon, Josephine Aluoch, Nandini Choudhury, Daniel Lagat, Celestine Ashimosi, Whitney Biegon, Dennis Munyoro, Janet Lidweye, Jack Nyagaya, Ilene Wilets, Allison DeLong, Rami Kantor, Rachel Vreeman, and Violet Naanyu. "Ethical Considerations for Engaging Children Living with HIV in Research." Journal of Empirical Research on Human Research Ethics 18, no. 5 (2023): 346–362. https://doi.org/10.1177/15562646231184074.

Gostin, Lawrence O., and Benjamin Mason Meier. Global Health Law and Policy: Ensuring Justice for a Healthier World. Oxford: Oxford University Press, 2023. https://doi.org/10.1093/oso/9780197682993.001.0001.

Kawu, Abdullahi Abubakar, Joseph Elijah, Ibrahim Abdullahi, Jamilu Yahaya Maipanuku, Sakinat Folorunso, Mariam Basajja, Francisca Oladipo, and Hauwa Limanko Ibrahim. "FAIR Guidelines and Data Regulatory Framework for Digital Health in Nigeria." Data Intelligence 4, no. 4 (October 2022): 839–51. https://doi.org/10.1162/dint_a_00174.

Kiwanuka, Suzanne N., Ziyada Babirye, Steven N. Kabwama, Andrew K. Tusubira, Susan Kizito, Rawlance Ndejjo, Marc Bosonkie, Landry Egbende, Berthold Bondo, Mala Ali Mapatano, Ibrahima Seck, Oumar Bassoum, Mamadou M. M. Leye, Issakha Diallo, Olufunmilayo I. Fawole, Segun Bello, Mobolaji M. Salawu, Eniola A. Bamgboye, Magbagbeola David Dairo, Ayo Steven Adebowale, Rotimi F. Afolabi, and Rhoda K. Wanyenze. "Health Workforce Incentives and Dis-incentives during the COVID-19 Pandemic." BMC Health Services Research 24, no. 1 (2024): 422. https://doi.org/10.1186/s12913-024-10738-0.

Lupton, Deborah. "Young People's Use of Digital Health Technologies in the Global North: Narrative Review." Journal of Medical Internet Research 23, no. 1 (January 2021): e18286. https://doi.org/10.2196/18286.

Mariner, Wendy K., George J. Annas, Nicole Huberfeld, and Michael Ulrich. Public Health Law. 3rd ed. New York: Wolters Kluwer, 2019. https://scholarship.law.bu.edu/books/124. Accessed December 17, 2025.

Mbunge, Elliot, Richard C. Millham, Maureen Nokuthula Sibiya, and Sam Takavarasha Jr. "Leveraging Mobile Phones to Improve Malaria Healthcare Service Delivery." Behaviour & Information Technology (2024): 1–14. https://doi.org/10.1080/0144929X.2024.2335841.

Min, Naing Bo Bo. Digital Health Services in Humanitarian Response Programs. Master's thesis, Thammasat University, 2022. https://digital.library.tu.ac.th/tu_dc/frontend/Info/item/dc:311659. Accessed December 15, 2025.

Musa, Muhammad. Using Access Control to Protect Health Information Systems. Master's thesis, Uganda Technology and Management University, 2016. https://utamu.ac.ug/wp-content/uploads/2024/02/Using-Access-Control-to-Protecting-Health-Information-System.pdf. Accessed December 20, 2025.

Mutabazi, Dominic, and Hilary Nwaechefu. "Leveraging Digital Technologies to Strengthen Compliance with International Human Rights Standards in Uganda." Kampala International University Law Journal 7, no. 2 (2025): 94–108. https://doi.org/10.59568/KIULJ-2025-7-2-07.

Ngaiza, Gloria Karungo. Technology Integration in Newborn Care. MSc diss., University of Oxford, 2024. https://www.researchgate.net/publication/397435114_Technology_integration_in_newborn_care_examining_communication_and_decision-

making_among_health_professionals_in_Kenyan_hospitals. Accessed December 10, 2025.

Obasola, Oluwaseun Ireti, Iyabo Mabawonku, and Ikeoluwa Lagunju. "A Review of e-Health Interventions for Maternal and Child Health in Sub-Saharan Africa." Maternal and Child Health Journal 19, no. 8 (2015): 1813–1824. https://doi.org/10.1007/s10995-015-1695-0.

Ogwu, Matthew Chidozie, and Sylvester Chibueze Izah. "Challenges and Ethical Considerations in Technological Interventions in the Management of Tropical Diseases." In Technological Innovations for Managing Tropical Diseases (2025), 309–327. https://doi.org/10.1007/978-3-031-82622-1_13.

Owoyemi, Ayomide, Eugeniah Arthur, Tope Ladi-Akinyemi, Yemisi Babalola, and Damian Okaibedi Eke. "Trustworthy AI in Healthcare: Exploring Ethics in Digital Health Technologies in Nigeria." In Trustworthy AI: African Perspectives (2025), 193–206. https://doi.org/10.1007/978-3-031-75674-0_9.

Qiang, Christine Zhenwei, Masatake Yamamichi, Vicky Hausman, and Daniel Altman. Mobile Applications for the Health Sector. Washington, DC: World Bank, 2011. https://doi.org/10.1596/978-0-8213-8638-0.

Rich, Emma, and Andy Miah. "Understanding Digital Health as Public Pedagogy: A Critical Framework." Societies 4, no. 2 (June 2014): 296–315. https://doi.org/10.3390/soc4020296.

Rinke de Wit, Tobias F., et al. "Digital Health Systems Strengthening in Africa for Rapid Response to COVID-19." Frontiers in Health Services 2 (2022): 987828. https://doi.org/10.3389/frhs.2022.987828.

Rusdiana, Erma, Paul Atagamen Aidonojie, Muwaffiq Jufri, Hassan Ismaila, and Nathan Ibrahim. "Augment Legal Efforts through Artificial Intelligence in Curtailing Economic Fraud in Nigeria: Issues and Challenges." Indonesian Journal of Criminal Law Studies 10, no. 1 (May 15, 2025): 115–148. https://doi.org/10.15294/ijcls.v10i1.84572.

Sekalala, Sharifah, Belinda Rawson, and Pamela Andanda. "A Socio-Legal Critique of the Commercialization of Digital Health in Sub-Saharan Africa." Policy Studies (2025): 1–21.

Sekandi, Juliet Nabbuye, Kenya Murray, Corinne Berryman, Paula Davis-Olwell, Caroline Hurst, Robert Kakaire, Noah Kiwanuka, Christopher C. Whalen, and Erisa Sabakaki Mwaka. "Ethical, Legal, and Sociocultural Issues in the Use of Mobile Technologies and Call Detail Records Data for Public Health in East Africa." Interactive Journal of Medical Research 11, no. 1 (2022): e35062. https://doi.org/10.2196/35062.

Senbekov, Maksut, Timur Saliev, Zhanar Bukeyeva, Aigul Almabayeva, Marina Zhanaliyeva, Nazym Aitenova, Yerzhan Toishibekov, and Ildar Fakhradiyev. "The Recent Progress and Applications of Digital Technologies in Healthcare: A Review." International Journal of Telemedicine and Applications 2020 (December 2020): 1–18. https://doi.org/10.1155/2020/8830200.

Skeen, Sarah, Marguerite Marlow, Stefani du Toit, G. J. Melendez-Torres, Lynette Mudekunye, Edwick Mapalala, Kelvin Ngoma, Byamukama Michael Ntanda, Moroesi Maketha, Caitlin Grieve, Laura Hartmann, Sarah Gordon, and Mark Tomlinson. "Using WhatsApp Support Groups to Promote Responsive Caregiving." Digital Health 9 (2023): 56–71. https://doi.org/10.1177/20552076231163479.

Tshivhase, Livhuwani, and Idah Moyo. "Ubuntu Philosophy as a Strategy to Promote Access to Under-Five Child Healthcare Services." Curationis 48, no. 1 (2025). https://doi.org/10.4102/curationis.v48i1.2663.

Twinomugisha, Ben. Fundamentals of Health Law in Uganda. Kampala: Pretrial University Law Press, 2015. https://www.pulp.up.ac.za/catalogue/monographs/fundamentals-of-health-law-in-uganda.

Udenigwe, Ogochukwu, Olumuyiwa Omonaiye, and Sanni Yaya. "Gender Transformative Approaches in mHealth for Maternal Healthcare in Sub-Saharan Africa." Frontiers in Digital Health 5 (2023). https://doi.org/10.3389/fdgth.2023.1139274.

Udenigwe, Ogochukwu. Social Norms and Power Structures: Exploring Mobile Health Technologies for Maternal Healthcare in Nigeria. PhD diss., University of Ottawa, 2023. http://dx.doi.org/10.20381/ruor-29625.

Uneke, Chigozie J., Issiaka Sombie, Namoudou Keita, Virgil Lokossou, Ermel Johnson, and Pierre Ongolo-Zogo. "Improving Maternal and Child Health Policymaking Processes in Nigeria." Health Research Policy and Systems 15, suppl. 1 (2017): 48. https://doi.org/10.1186/s12961-017-0210-3.

Vadisetty, Rahul, and Anand Polamarasetti. "Regulatory Framework for Digital Health, Data Privacy, and Cybersecurity." In Sustainable Healthcare Systems in Africa, 1st ed., by Wasswa Shafik, Adel Ben Youssef, Chithirai Pon Selvan, and Pushan Kumar Dutta, 132–53. New York: CRC Press, 2025. https://doi.org/10.1201/9781003530879-10.

Wilensky, Sarah E., and Joel B. Teitelbaum. Essentials of Health Policy and Law. 5th ed. New York: Foundation Press, 2023. https://samples.jblearning.com/9781284247459/9781284247497_FM.pdf.

World Health Organization. Health Technology Assessment of Medical Devices. Geneva: WHO, 2025.

https://iris.who.int/server/api/core/bitstreams/68a45b5a-97a6-44e1-b3bf-8cb39cc460f3/content. Accessed January 15, 2026.

Yahaya, Hafsat, Abbas Bashir Umar, Ifejika Rosemary Chijioke, Ibitamuno Ehizemwogie, and Taiwo Oluwaseun Sokunbi. "Digital Innovation in Maternal and Child Health in Nigeria: Impacts, Challenges and Opportunities A Perspective." BioSocial Health Journal 2, no. 2 (2025): 44–49. https://doi.org/10.34172/bshj.69.

Yusuf, Abdul Azeez, Mukasa Charles, Muyinga Samuel, Abdullahi Bello, and Lukoma Ronald. "The Development and Growth of AI in Uganda: How Is Uganda Faring from a Legal Perspective?" Kampala International University Law Journal 6, no. 2 (2024): 204–223. https://doi.org/10.59568/KIULJ-2024-6-2-11.

Zziwa, Ivan, Anthoinette Ilolo, Maurice Dawson, and Brian Serwadda. "Regulating Emerging Technologies: Establishing Ethical and Legal Frameworks in East Africa." In Analyzing Privacy and Security Difficulties in Social Media, 441–464. Hershey, PA: IGI Global, 2025. https://doi.org/10.4018/979-8-3693-2320-0.ch020.

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