



A Systematic Literature Review of Digital Health Strategies for Equitable Access to Universal Health Coverage in Developing Countries

Ruth Nthenya Wambua

United States International University-Africa

Article History

Received: 2024-03-16

Revised: 2024-07-09

Accepted: 2024-07-19

Published: 2024-07-28

Keywords

Access

Coverage

Developing countries

Digital health

Universal

How to cite:

Wambua, R. N. (2024). A Systematic Literature Review of Digital Health Strategies for Equitable Access to Universal Health Coverage in Developing Countries. *Journal of Science, Innovation and Creativity*, 2(1), 11-21.

Copyright © 2024



Abstract

Digital health is at the nexus of Health and Information and Communication Technology (ICT). This study aims to explore and provide a comprehensive systematic literature review of digital health strategies for equitable access to Universal Health Coverage (UHC) in developing countries. The study also seeks to identify gaps for further research and highlight future research opportunities in digital health for equitable access to UHC in developing countries. The research method employed was a structured literature review, according to the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines. Journal articles published in the year 2018 to the year 2023 were considered. A total of 77 articles were initially identified, and with 5 articles finally being included and considered. From the findings information systems, services, programmes, and policies, and an appropriate consideration of technologies, influence digital health for equitable access to UHC. Future research should consider the development of guiding frameworks and models that are user-centred, have multi-sectoral involvement, and consider appropriate technology.

Introduction

The World Health Organization (WHO) health system framework outlines that when access, coverage, quality, and safety are applied to the system, building blocks of service delivery; health workforce; information; medical products, vaccines, and technologies; financing; and leadership/governance, the overall outcomes will be improved health (level and equity); responsiveness; social and financial risk protection; and improved efficiency (Manyazewal, 2017; Kodali, 2023). Further, according to WHO, the three (3) action lines (axis) for realising UHC are the population axis, services axis, and costs axis (Wilson et al., 2021).

Digital health is the right use of information and communication technologies (ICTs) to improve the well-being and health of people individually and as a population (Fatehi et al., 2020). Digital Health encompasses eHealth, health informatics, telehealth, mHealth, health IT, and health technologies, as well as all cases where health is delivered and accessed electronically (Fatehi et al., 2020; D. Wilson et al., 2021; Erku et al., 2023). Therefore, this study on digital health strategies for equitable access to UHC, relates to the WHO health system framework (Manyazewal, 2017; Kodali, 2023), leverages ICT



(Ramsey et al., 2020; Mardani et al., 2020; Babatunde et al., 2021; Mavangere et al., 2022; Bloom et al., 2023), and focusses on the population action line for realising UHC (Wilson et al., 2021).

Target 3.8 of the Sustainable Development Goals was added in 2015 to address Universal Health Coverage (UHC). UHC proposes that health care, which covers the entire range of vital, high-quality healthcare services, is available to all people in a population without suffering financial hardship (Muthuuri, 2020). On the other hand, technological advancements have resulted in having health systems integrating technology to address disparities (Ahmed et al., 2020), and thus informing digital health, which is at the nexus of the two sectors; health, and Information and Communication Technologies (ICT) (Olu et al., 2019; Memon, 2019). With digital health and UHC garnering significant attention on the global stage, among the emergent concerns is equitable access. Among the proposals to promote equitable access are guiding system models (Puradiredja et al., 2022) and inclusive co-design approaches in systems implementation (Latulippe et al., 2020; Darley & Carroll, 2022; Miller et al., 2023; Wambua, 2023). In line with this, every nation in the United Nations (UN) pledged to achieve UHC by 2030, and several Low and Middle-Income Countries (LMICs) are presently leveraging digital health to increase their citizens' access to high-quality, reasonably priced healthcare as well as reduce obstacles in the society (Olubiya et al., 2019).

Even with the worldwide push towards universal health coverage, half of the world's population still lacks access to basic medical care. Approximately 12% of the global population (800 million people), spend more than 10% of their household income on health care, pushing almost 100 million people into extreme poverty annually because of out-of-pocket (OOP) medical costs (WHO, 2022). Most African nations, and other jurisdictions are still ill-prepared to effectively handle their health issues. Governments' capability to address health issues is hampered by low per capita income, a restricted ability to mobilise domestic resources, and widespread health system bottlenecks, among them being the issue of equitable access (Oleribe et al., 2019; Okech & Lelegwe, 2015).

There exists a knowledge gap. This is majorly a result of inequalities in the accessibility and usability of digital health by a majority in rural and marginalised areas (Uleanya, 2023). Further, this knowledge gap is amplified by the issue of varied digital literacy levels (Chattu et al., 2021; Adepoju, 2022), and the digital divide problem (Mishi & Anakpo, 2022).

Additionally, there exists a gap in practice. First, there is variation in terminologies used in different digital health studies (Soloe et al., 2021). Further, there exists a mismatch in translating users' needs and skills by the developed technologies (Namatovu et al., 2021; Latulippe et al., 2020; Van Calis et al., 2023). Consequently, the development of earlier products calls for a fresh interpretation of conception, communication, and implementation in various contexts (Macdonald et al., 2023), to mitigate the existing gaps and to reap the benefits of digital health (Magsamen-Conrad et al., 2020); (Margeanu et al., 2020); (Airola, 2021); (Lee et al., 2021).

Driven by the identified gaps, this study seeks to provide a comprehensive systematic literature review of digital health strategies for equitable access to universal health coverage (UHC) in developing countries for the past six years (2018-2023). To do so, this study considers all health-related studies that discuss digital health towards equitable access to any health outcome to answer the following research questions:

Q1. What is the status of the development of literature on digital health strategies for equitable access to universal health coverage in developing countries?

Q2. What are the gaps and opportunities for future research on digital health strategies for equitable access to universal health coverage in developing countries?



This study makes two key contributions. First, it highlights the status of literature development on digital health strategies for equitable access to universal health coverage in developing countries. Secondly, based on the review results, projecting noted research gaps and opportunities for future research on digital health strategies for equitable access to universal health coverage in developing countries. A review of the digital health strategies for equitable access to UHC in developing countries follows the introduction section. After that, the research method is presented, followed by the results, discussion, and limitations of the study, and finally, the study's conclusion is presented.

Digital health strategies for equitable access to UHC in developing countries

mHealth involves using mobile phones (Memon, 2019; Mariwah et al., 2022). This presents opportunities for using wireless devices like phones and personal digital assistants to share Short Message Service (SMS) messages, perform medical consultations, and for inter-sectoral consultations (Memon, 2019). Reported strategies and interventions through mHealth include achieving general communication within the health environment, sharing hospital reminders, enabling general reporting, hospital surveillance, supporting literature, education, knowledge, and research (Memon, 2019; Mariwah et al., 2022). Example implementations within the developing countries include: Mobile Midwife and Client Data App in Ghana; MomConnect (Mehl et al., 2018) and Cellphones4HIV in South Africa; cStock, RapidSMS, and ChildCount+ in Malawi; Intimo in Mozambique; and CommCare in Tanzania (Mariwah et al., 2022).

eHealth on the other hand, is the use of ICTs in health (Ojo et al., 2021). Through eHealth, platforms and systems have been deployed within the health ecosystems in support of various functions, including financing (D. R. Wilson et al., 2023), communication, information, and monitoring systems (Ojo et al., 2021).

Within developing countries, there has been notable penetration of technology in health, supporting digital health. Over time, innovative approaches continue to be proposed in support of digital health, such as frameworks to advance digital health for UHC (Olu et al., 2019; Ojo et al., 2021) conceptual models (Okuzu et al., 2022; D. Wilson et al., 2021), research that focusses on equity and considers quantitative research methods to capture user needs (O'Brien et al., 2023), as well as reworking digital health systems to pave way for UHC (Rinke De Wit et al., 2022). However, equitable access to digital health remains a challenge for varied reasons, key among them being lack of connectivity (Capasso et al., 2024), slow diffusion, limited adoption and digital illiteracy (Kodali & Das, 2021).

Following the reviewed literature, the study by Erku et al. (2023) pointed to the benefits and success of eHealth majorly in areas with enabling environment. The study further noted impediments to equitable access, because of differences in technology availability among regions, restrictive socio-cultural norms, and digital illiteracy. The digital health strategies proposed included having a multi-sectoral focus on digital health solutions that were technically oriented and considered the whole health ecosystem. Further, considering guiding models to better relate digital health to universal health coverage (Erku et al., 2023).

The discussion on equitable access is furthered by Van De Vijver et al. (2023), who report that when digital health is not well projected, it would result in increased inequalities in healthcare, affecting the treasured worldwide goal of achieving universal health coverage. In Aware of this risk, a proposed digital health strategy is that policy-makers, medical experts, and patients should work together to design, execute, and disseminate digital health initiatives. Moreover, advocate for multi-level knowledge exchange and practical knowledge application on digital innovations for equitable access to health (Van De Vijver et al., 2023). Further, to improve access to care and promote better health outcome, Bilal et al. (2022) in the case of digital health for improved access to maternal care in Africa,



proposed overcoming obstacles to implementation. To do this, workable frameworks that focused on technology, user acceptability, short- and long-term finance, organisational considerations, and political and legal issues were proposed (Bilal et al., 2022).

On the other hand, Maphosa (2022) discussed the development of digital applications to promote access to information. Therefore, deploying digital health applications and systems, including websites that are freely accessible and highly interrelated. Hence promoting systems and applications interoperability and accessibility (Maphosa, 2022). To bridge noted digital health divide, Campbell et al. (2019) advocated for policies and support to facilitate smart devices and internet access to all.

Research method

The Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines informed the design adopted in this review.

Search strategy

The considered databases were EBSOhost, Online Wiley, and Taylor and Francis because of their credibility, relevance, and inclusion of collections from diverse sources. For instance, Medline, the National Library of Medicine's (NLM) articles citation database, which also comprises the majority of PubMed, and articles related to this study were accessed through EBCOhost.

The Boolean operators AND and OR were used on a combination of keywords formulated from the study to retrieve relevant literature from the noted databases. The search focused on the document title and abstract to identify articles relevant to the study. The following are the keywords used in various combinations across the databases to inform the study's search terms (Str):

Str: ("digital health:" OR "ehealth:" OR "telehealth:" OR "mhealth:" OR "telemedicine:") AND ("strateg*" OR "model*" OR "framework*")AND ("equitable access:" OR "equity in access:" OR "access to all:" OR "access for all:" OR "access:") AND ("universal health coverage:" OR "UHC:" "universal care:" "care for all:" "health for all:") AND ("developing countr*:" OR "developing econom*:" OR "global south:")

Further refinement was done by scanning the list of references from the identified articles and searching Google Scholar. This was done to ensure a comprehensive search, particularly to find grey literature and other studies that may have been left out in this review. Google Scholar was used to contain academic resources across disciplines and source types. The choice of Google Scholar was also due to its accessibility and potential to uncover research from developing countries, which may be in avenues not listed among the established databases used for this study. From this exercise, five additional articles were added to the study.

Eligibility criteria

The following inclusion and exclusion criteria were used:

- i. Publication type was peer-reviewed journal articles where full-text was available,
- ii. The publication period was articles published within the past six years, the period 2018 to 2023,
- iii. Articles published in the English language,
- iv. Relevance to the research questions where focus was on digital health strategies for equitable access to UHC in developing countries,
- v. The geographic location considered was developing countries.

Data selection, extraction, and synthesis

A literature search was conducted across the databases using the defined search terms. Selected literature was extracted and coded based on the study objectives on an Excel sheet. The coded



categories included a unique identifier for each journal, year of publication, author(s), research method used, and the study focus. The extracted data was then synthesised as summaries in text and tables. The findings, conclusions, and recommendations from the included studies were presented with tabular summaries. The variability in the reported methods and results made meta-analysis unsuitable for this study.

Results

The literature search yielded 77 records. Based on the database searches, 72 articles were identified (EBSCOhost=16; Online Wiley=51; Taylor and Francis=5). Following the refinement exercise, an additional five articles were identified (EBSCOhost=16; Online Wiley=51; Taylor and Francis=5; Google Scholar =5), accounting for the initial 77 articles. Screening for cases of duplicate documents excluded eight articles, and a further 15 articles were excluded from title and abstract screening, resulting in 54 articles. Applying the study's inclusion and exclusion criteria to the 54 articles further excluded 49 articles, leaving out only five articles, which then informed the study. Figure 1 below summarises the PRISMA search results, summarising the screening process.

To answer the research question on the status of the development of literature on digital health strategies for equitable access to universal health coverage in developing countries, the included studies were analysed into categories. The categories included checking the number of publications per year for the study period, study focus in relation to the objectives, and the research method used.

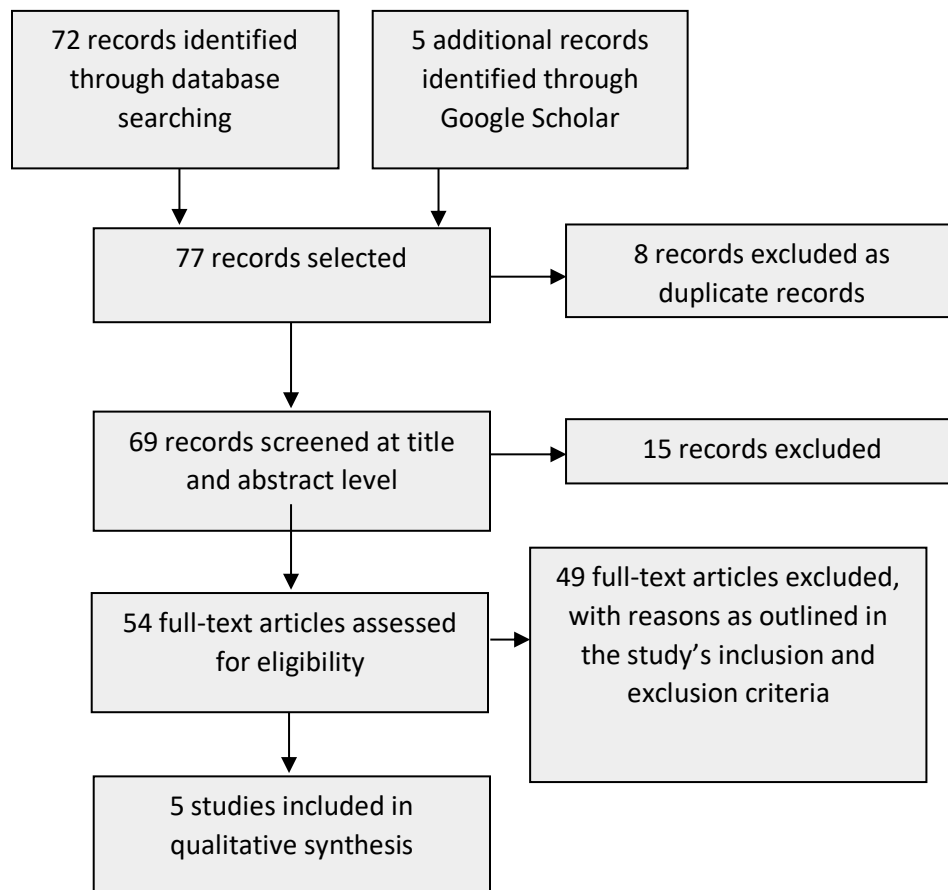


Figure 1: PRISMA search results, showing a summary of the screening process



Publications

The total number of publications included was five, with two in 2023, two in 2022, one in 2019, and none for 2021, 2020, and 2018, as shown in Table 1.

Table 1. Summary of the included publications

#	Authors	Study Title	Keywords
1	Erku et al. (2023)	Digital Health Interventions to Improve Access to and Quality of Primary Health Care Services: A Scoping Review	Digital health; mHealth; eHealth; primary healthcare; universal health coverage
2	Van De Vijver et al. (2023)	Digital health for all: How digital health could reduce inequality and increase universal health coverage	Digital divide, telemedicine, health equity, health policy, primary health care, health services accessibility
3	Bilal et al. (2022)	Improving access to maternal care in Africa through telemedicine and digital health	Africa, digital health, maternal care, telemedicine
4	Maphosa (2022)	Promoting access to COVID-19 Information by underserved communities through the development of a mHealth app	Index terms; health information; healthcare; design science research; mhealth; COVID-19
5	Campbell et al. (2019)	Bridging the digital health divide: toward equitable global access to mobile health interventions for people living with HIV	Mhealth; mobile applications; text messaging; HIV; smartphone; internet; digital divide; telemedicine

Study focus

The publications included were in the context of developing countries, with discussions on improving access to health care. The study Erku et al. (2023) focussed on digital health interventions to improve access. The highlighted interventions from this study were end-user inclusion in the process of introducing digital solutions, considering the functionality of the intended technology, considering the behavioural responses of the target users, considering the level of readiness to use the digital solutions, and also the capacity available to accommodate the digital innovations (Erku et al., 2023). To facilitate that, technological advancements can improve everyone's access to universal health care. Van De Vijver et al. (2023) proposed that decision-makers, healthcare professionals, and other interested parties should open up to knowledge sharing, both locally and globally.

On the other hand, Bilal et al. (2022), emphasised on digital health and telemedicine as avenues for equitable access to health. The study further highlighted models that considered technology, user acceptability, finance, organisational factors, and legal implications crucial in overcoming implementation challenges (Bilal et al., 2022). To add to this, Maphosa (2022) proposed the development of applications and systems that integrated and allowed for data sharing, as avenues to promoting access to health information. Moreover, the study by Campbell et al. (2019) emphasised on having policies for universal access to the internet, which is the key driver of digital health.



Research method

The research method used for all the included studies was qualitative. These included adopting a scoping review methodology (Erku et al., 2023), a design science approach that relied on secondary data (Maphosa, 2022), and the use of published content to inform research output (Van De Vijver et al., 2023; Bilal et al., 2022; Campbell et al., 2019).

Discussion

This section answers the second research question on the gaps and opportunities for future research on digital health strategies for equitable access to universal health coverage in developing countries. This is done by summarising the main findings from the studies included. Further, the limitations of this study are also discussed. First, there is a gap on the availability of guiding frameworks and models. Among the digital health strategies, is coming up with frameworks and models that speak to various scenarios within the health ecosystem. The digital health models should consider technology, user acceptability, short and long-term financial support, organizational factors, geographical and economic factors, and governmental and legal implications (Bilal et al., 2022).

On the other hand, digital health should factor in well-integrated applications and systems that allow for data sharing. The interoperability of these systems would work to ease communication and information transfer within the health sector, hence improving access among the population (Maphosa, 2022). These digital innovations should be user-centred. Moreover, multi-sectoral involvement should be factored in to ensure environmental, facilities, technology, and user readiness when developing and deploying digital health solutions. This will better impact the innovations and promote access and use (Erku et al., 2023). Policies and programmes supporting digital health for equitable access to universal health care are paramount (Campbell et al., 2019). Consequently, proper guidance is provided to both the user and the parties involved.

Limitations

Regarding the study's strengths, PRISMA procedures were followed in reviewing and publishing the results. Additionally, we incorporated a wide range of inclusion criteria about the outcomes evaluated to offer a comprehensive and systematic evaluation of digital health strategies for equitable access to UHC. However, this study is not without limitations. First, the study may have missed some articles because it considered only peer-reviewed journal articles and those published in the English language. Second, the publication period from 2018 to 2023 could have missed articles either published earlier or after the study period. Third, the study was limited to only publications in the context of developing countries, which again may have missed informing studies not in the geographical range of the study.

Conclusion

In conclusion, progress toward the Sustainable Development Goals (SDGs) is crucial. SDG3 on Good Health and Well-Being specifically states the fundamental tenet of Universal Health Coverage (UHC), where everyone has access to the health services they require, where and when they need them. Reducing obstacles improves outcomes, and digital health innovations are advancing equitable access to health.

Equitable access informs the global health agenda, with digital health presently a key component. Digital health strategies that involve developing guiding frameworks and models, considering digital health services, programmes and policies, digital health information systems, and the appropriate use of digital health tools and technologies are key research efforts to advancing digital health for equitable access to UHC.



References

- Adepoju, O. D. (2022). Backward Design Modelling of Digital Literacy in Africa. In H. Asamoah-Hassan (Ed.), *Digital Literacy, Inclusivity and Sustainable Development in Africa* (1st ed., pp. 221-232). Facet. <https://doi.org/10.29085/9781783305131.014>
- Ahmed, T., Rizvi, S. J. R., Rasheed, S., Iqbal, M., Bhuiya, A., Standing, H., Bloom, G., & Waldman, L. (2020). Digital Health and Inequalities in Access to Health Services in Bangladesh: Mixed Methods Study. *JMIR mHealth and uHealth*, 8(7), e16473. <https://doi.org/10.2196/16473>
- Airola, E. (2021). Learning and Use of eHealth Among Older Adults Living at Home in Rural and Nonrural Settings: Systematic Review. *Journal of Medical Internet Research*, 23(12), e23804. <https://doi.org/10.2196/23804>
- Babatunde, A. O., Abdulkareem, A. A., Akinwande, F. O., Adebayo, A. O., Omenogor, E. T., Adebisi, Y. A., & Ilesanmi, E. B. (2021). Leveraging mobile health technology towards Achieving Universal Health Coverage in Nigeria. *Public Health in Practice*, 2, 100120. <https://doi.org/10.1016/j.puhip.2021.100120>
- Bilal, W., Mohanan, P., Rahmat, Z. S., Ahmed Gangat, S., Islam, Z., Essar, M. Y., Aborode, A. T., & Onyeaka, H. (2022). Improving access to maternal care in Africa through telemedicine and digital health. *The International Journal of Health Planning and Management*, 37(4), 2494-2500. <https://doi.org/10.1002/hpm.3498>
- Bloom, G., Balasubramaniam, P., Marin, A., Nelson, E., Quak, E., Husain, L., & Barker, T. (2023). *Towards Digital Transformation for Universal Health Coverage*. Institute of Development Studies. <https://doi.org/10.19088/CC.2023.005>
- Campbell, B. R., Ingersoll, K. S., Flickinger, T. E., & Dillingham, R. (2019). Bridging the digital health divide: Toward equitable global access to mobile health interventions for people living with HIV. *Expert Review of Anti-Infective Therapy*, 17(3), 141-144. <https://doi.org/10.1080/14787210.2019.1578649>
- Capasso, A., Colomar, M., Ramírez, D., Serruya, S., & De Mucio, B. (2024). Digital health and the promise of equity in maternity care: A mixed methods multi-country assessment on the use of information and communication technologies in healthcare facilities in Latin America and the Caribbean. *PLOS ONE*, 19(2), e0298902. <https://doi.org/10.1371/journal.pone.0298902>
- Chattu, V. K., Lopes, C. A., Javed, S., & Yaya, S. (2021). Fulfilling the promise of digital health interventions (DHI) to promote women's sexual, reproductive and mental health in the aftermath of COVID-19. *Reproductive Health*, 18(1), 112. <https://doi.org/10.1186/s12978-021-01168-x>
- Darley, A., & Carroll, Á. (2022). Conducting Co-Design with Older People in a Digital Setting: Methodological Reflections and Recommendations. *International Journal of Integrated Care*, 22(4), 18. <https://doi.org/10.5334/ijic.6546>
- Erku, D., Khatri, R., Endalamaw, A., Wolka, E., Nigatu, F., Zewdie, A., & Assefa, Y. (2023). Digital Health Interventions to Improve Access to and Quality of Primary Health Care Services: A Scoping Review. *International Journal of Environmental Research and Public Health*, 20(19), 6854. <https://doi.org/10.3390/ijerph20196854>
- Fatehi, F., Samadbeik, M., & Kazemi, A. (2020). What is Digital Health? Review of Definitions. In A. Värri, J. Delgado, P. Gallos, M. Hägglund, K. Häyrynen, U.-M. Kinnunen, L. B. Pape-Haugaard, L.-M. Peltonen, K. Saranto, & P. Scott (Eds.), *Studies in Health Technology and Informatics*. IOS Press. <https://doi.org/10.3233/SHTI200696>



- Kodali, P. B. (2023). Achieving Universal Health Coverage in Low- and Middle-Income Countries: Challenges for Policy Post-Pandemic and Beyond. *Risk Management and Healthcare Policy, Volume 16*, 607–621. <https://doi.org/10.2147/RMHP.S366759>
- Kodali, P. B., & Das, S. (2021). Digital health technologies for universal health coverage: A promising change. *CURRENT SCIENCE*, 120(4).
- Latulippe, K., Hamel, C., & Giroux, D. (2020). Co-Design to Support the Development of Inclusive eHealth Tools for Caregivers of Functionally Dependent Older Persons: Social Justice Design. *Journal of Medical Internet Research*, 22(11), e18399. <https://doi.org/10.2196/18399>
- Lee, J., Lee, E.-H., & Chae, D. (2021). eHealth Literacy Instruments: Systematic Review of Measurement Properties. *Journal of Medical Internet Research*, 23(11), e30644. <https://doi.org/10.2196/30644>
- Macdonald, L. K., Bryan, V. D., Hachey, S. M., & Thirsk, L. M. (2023). “We talk teeth”: Exploring faculty EDIA (equity, diversity, inclusivity, and access) capacity in dental education. *Journal of Dental Education*, 87(7), 987–996. <https://doi.org/10.1002/jdd.13208>
- Magsamen-Conrad, K., Wang, F., Tetteh, D., & Lee, Y.-I. (2020). Using Technology Adoption Theory and a Lifespan Approach to Develop a Theoretical Framework for eHealth Literacy: Extending UTAUT. *Health Communication*, 35(12), 1435–1446.
- Manyazewal, T. (2017). Using the World Health Organization health system building blocks through survey of healthcare professionals to determine the performance of public healthcare facilities. *Archives of Public Health*, 75(1), 50. <https://doi.org/10.1186/s13690-017-0221-9>
- Maphosa, V. (2022). Promoting access to COVID-19 Information by underserved communities through the development of a mHealth app. *Cogent Public Health*, 9(1), 2095722. <https://doi.org/10.1080/27707571.2022.2095722>
- Mardani, A., Saraji, M. K., Mishra, A. R., & Rani, P. (2020). A novel extended approach under hesitant fuzzy sets to design a framework for assessing the key challenges of digital health interventions adoption during the COVID-19 outbreak. *Applied Soft Computing*, 96, 106613. <https://doi.org/10.1016/j.asoc.2020.106613>
- Margineanu, I., Louka, C., Vincenti-Gonzalez, M., Saktiawati, A. M. I., Schierle, J., Abass, K. M., Akkerman, O., Alffenaar, J.-W., Ranchor, A. V., & Stienstra, Y. (2020). Patients and Medical Staff Attitudes Toward the Future Inclusion of eHealth in Tuberculosis Management: Perspectives from Six Countries Evaluated using a Qualitative Framework. *JMIR mHealth and uHealth*, 8(11), e18156. <https://doi.org/10.2196/18156>
- Mariwah, S., Machistey Abane, A., Asiedu Owusu, S., Kasim, A., Robson, E., Castelli, M., & Hampshire, K. (2022). Formalising ‘informal’ mHealth in Ghana: Opportunities and challenges for Universal Health Coverage (UHC). *Global Public Health*, 17(5), 768–781. <https://doi.org/10.1080/17441692.2021.1874467>
- Mavangere, N., Edifor, E. E., Adedoyin, F., Apeh, E., & Owusu, A. (2022). Education inequality in underserved regions: Exploring the role of technology to promote diversity and inclusivity. 2022 *IEEE International Conference on E-Business Engineering (ICEBE)*, 288–293. <https://doi.org/10.1109/ICEBE55470.2022.00057>
- Mehl, G. L., Tamrat, T., Bhardwaj, S., Blaschke, S., & Labrique, A. (2018). Digital health vision: Could MomConnect provide a pragmatic starting point for achieving universal health coverage in South Africa and elsewhere? *BMJ Global Health*, 3(Suppl 2), e000626. <https://doi.org/10.1136/bmjgh-2017-000626>
- Memon, K. N. (2019). Role of mHealth in getting Target of Universal Health Coverage. *Journal of Liaquat University of Medical & Health Sciences*, 18(02), 82–83. <https://doi.org/10.22442/jlumhs.191820605>



- Miller, S. J., Sly, J. R., Alcaraz, K. I., Ashing, K., Christy, S. M., Gonzalez, B., Lu, Q., Newton, R. L., Redmond, M., Shen, M., Thomas-Purcell, K., Yi, J., Veinot, T., & Meade, C. D. (2023). Equity and behavioral digital health interventions: Strategies to improve benefit and reach. *Translational Behavioral Medicine*, 13(6), 400–405. <https://doi.org/10.1093/tbm/ibad010>
- Mishi, S., & Anakpo, G. (2022). Digital Gap in Global and African Countries: Inequalities of Opportunities and COVID-19 Crisis Impact. In H. Asamoah-Hassan (Ed.), *Digital Literacy, Inclusivity and Sustainable Development in Africa* (1st ed., pp. 1–30). Facet. <https://doi.org/10.29085/9781783305131.002>
- Muthuuri, J. M. (2020). Demystifying the concept of universal health care: a review. *East African Orthopaedic Journal*, 14.
- Namatovu, H. K., Oyana, T. J., & Sol, H. G. (2021). Barriers to eHealth adoption in routine antenatal care practices: Perspectives of expectant mothers in Uganda – A qualitative study using the unified theory of acceptance and use of technology model. *DIGITAL HEALTH*, 7, 205520762110644. <https://doi.org/10.1177/20552076211064406>
- O'Brien, N., Li, E., Chaibva, C. N., Gomez Bravo, R., Kovacevic, L., Kwame Ayisi-Boateng, N., Lounsbury, O., Nwabufu, N. F. F., Senkyire, E. K., Serafini, A., Surafel Abay, E., Van De Vijver, S., Wanjala, M., Wangari, M.-C., Moosa, S., & Neves, A. L. (2023). Strengths, Weaknesses, Opportunities, and Threats Analysis of the Use of Digital Health Technologies in Primary Health Care in the Sub-Saharan African Region: Qualitative Study. *Journal of Medical Internet Research*, 25, e45224. <https://doi.org/10.2196/45224>
- Ojo, A., Tolentino, H., & Yoon, S. (2021). Strengthening eHealth Systems to Support Universal Health Coverage in sub-Saharan Africa. *Online Journal of Public Health Informatics*, 13(3). <https://doi.org/10.5210/ojphi.v13i3.11550>
- Okech, T. C., & Lelegwe, S. L. (2015). Analysis of Universal Health Coverage and Equity on Health Care in Kenya. *Global Journal of Health Science*, 8(7), 218. <https://doi.org/10.5539/gjhs.v8n7p218>
- Okuzu, O., Malaga, R., Okerefor, K., Amos, U., Dosunmu, A., Oyeneyin, A., Adeoye, V., Sambo, M. N., & Ebenso, B. (2022). Role of digital health insurance management systems in scaling health insurance coverage in low- and Middle-Income Countries: A case study from Nigeria. *Frontiers in Digital Health*, 4, 1008458. <https://doi.org/10.3389/fdgth.2022.1008458>
- Oleribe, O. E., Momoh, J., Uzochukwu, B. S., Mbofana, F., Adebisi, A., Barbera, T., Williams, R., & Taylor Robinson, S. D. (2019). Identifying Key Challenges Facing Healthcare Systems in Africa And Potential Solutions. *International Journal of General Medicine*, 12, 395–403. <https://doi.org/10.2147/IJGM.S223882>
- Olu, O., Muneene, D., Bataringaya, J. E., Nahimana, M.-R., Ba, H., Turgeon, Y., Karamagi, H. C., & Dovlo, D. (2019). How Can Digital Health Technologies Contribute to Sustainable Attainment of Universal Health Coverage in Africa? A Perspective. *Frontiers in Public Health*, 7, 341. <https://doi.org/10.3389/fpubh.2019.00341>
- Olubiyi, O., Futterer, A., & Kang-Yi, C. D. (2019). Mental health care provided through community school models. *The Journal of Mental Health Training, Education and Practice*, 14(5), 297–314. <https://doi.org/10.1108/JMHTEP-01-2019-0006>
- Puradiredja, D. I., Kintu-Sempa, L., Eyber, C., Weigel, R., Broucker, B., Lindkvist, M., Casamitjana, N., Reynolds, R., Klinkel, H.-F., Matteelli, A., & Froeschl, G. (2022). Adapting teaching and learning in times of COVID-19: A comparative assessment among higher education institutions in a global health network in 2020. *BMC Medical Education*, 22(1), 507. <https://doi.org/10.1186/s12909-022-03568-4>
- Ramsey, W. A., Heidelberg, R. E., Gilbert, A. M., Heneghan, M. B., Badawy, S. M., & Alberts, N. M. (2020). eHealth and mHealth interventions in pediatric cancer: A systematic review of



- interventions across the cancer continuum. *Psycho-Oncology*, 29(1), 17–37. <https://doi.org/10.1002/pon.5280>
- Rinke De Wit, T. F., Janssens, W., Antwi, M., Milimo, E., Mutege, N., Marwa, H., Ndili, N., Owino, W., Waiyaiya, E., Garcia Rojas, D. C., Dolfing, M., De Graaff, A., Swanepoel, R., Van Der Graaf, M. H., Mulder, D., De Sanctis, T., Kratule, S., Koyuncu, C., Rogo, K., ... Spieker, N. (2022). Digital health systems strengthening in Africa for rapid response to COVID-19. *Frontiers in Health Services*, 2, 987828. <https://doi.org/10.3389/frhs.2022.987828>
- Soloe, C., Burrus, O., & Subramanian, S. (2021). The Effectiveness of mHealth and eHealth Tools in Improving Provider Knowledge, Confidence, and Behaviors Related to Cancer Detection, Treatment, and Survivorship Care: A Systematic Review. *Journal of Cancer Education*, 36(6), 1134–1146. <https://doi.org/10.1007/s13187-021-01961-z>
- Uleanya, C. (2023). Reconceptualising Disabilities and Inclusivity for the Postdigital Era: Recommendations to Educational Leaders. *Education Sciences*, 13(1), 51. <https://doi.org/10.3390/educsci13010051>
- Van Calis, J. F. E., Bevelander, K. E., Van Der Cruisen, A. W. C., Leusink, G. L., & Naaldenberg, J. (2023). Toward Inclusive Approaches in the Design, Development, and Implementation of eHealth in the Intellectual Disability Sector: Scoping Review. *Journal of Medical Internet Research*, 25, e45819. <https://doi.org/10.2196/45819>
- Van De Vijver, S., Tensen, P., Asiki, G., Requena-Méndez, A., Heidenrijk, M., Stronks, K., Cobelens, F., Bont, J., & Agyemang, C. (2023). Digital health for all: How digital health could reduce inequality and increase universal health coverage. *DIGITAL HEALTH*, 9, 20552076231185434. <https://doi.org/10.1177/20552076231185434>
- Wambua, R. N. (2023). Digital Learning Strategies Within Universities in Developing Countries: A Systematic Literature Review. *International Journal of Research Publications*, 117(1). <https://doi.org/10.47119/ijrp1001171120234446>
- Wilson, D. R., Haas, S., Van Gelder, S., & Hitimana, R. (2023). Digital financial services for health in support of universal health coverage: Qualitative programmatic case studies from Kenya and Rwanda. *BMC Health Services Research*, 23(1), 1036.
- Wilson, D., Sheikh, A., Görgens, M., Ward, K., & World Bank. (2021). Technology and Universal Health Coverage: Examining the role of digital health. *Journal of Global Health*, 11, 16006. <https://doi.org/10.7189/jogh.11.16006>