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Opportunities, Challenges, and Strategies for Implementing Telemedicine in Indonesian Healthcare

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ABSTRACT

Objective: *This review aims to examine telemedicine implementation, identify challenges, and formulate strategies to strengthen telemedicine services in Indonesia.* ***Method:*** *Articles were searched in PubMed, Scopus, ScienceDirect, Google Scholar, Garuda, and national journal databases using the keywords telemedicine, telehealth, digital health, implementation, challenges, access to healthcare, Indonesia, and health services. Selection followed the PRISMA process of identification, deduplication, title and abstract screening, and full-text review, yielding 30 included articles. Data were extracted by country, design, service context, mode of implementation, barriers, opportunities, and recommendations, then synthesized.* ***Results:*** *The review found that telemedicine was used for clinical consultations, primary care, maternal health, rehabilitation, chronic disease care, older-adult services, patient monitoring, and access to care in remote areas. The main opportunities include faster access, more efficient visits, continuity of care, expanded reach of health workers, and clinical decision support. The main challenges include the digital divide, limited internet access, facility readiness, data protection, system integration, financing, service quality, and differences in user acceptance.* ***Novelty:*** *The synthesis of findings from multiple studies is expected to show how telemedicine is applied, the benefits achieved, the barriers that persist, and the strategic steps that can be taken to strengthen access to healthcare.*

INTRODUCTION

Telemedicine enables healthcare providers to consult with patients, monitor their health, offer education, and coordinate care across distances. The World Health Organization identifies digital health as a means to strengthen health systems [1]. Its telemedicine implementation guide addresses service design, infrastructure, workforce, and governance [2]. For Indonesia, an archipelagic country with uneven distribution of health personnel and varying facility capacity, remote delivery has potential to improve access where travel is difficult.

During the COVID-19 pandemic, remote consultation helped maintain access when face-to-face encounters were restricted [3]. The pandemic also accelerated the use of digital tools in routine delivery [4]. Health systems had to modify workflow, staffing, and scheduling [5]. Evidence from clinical practice documented rapid expansion of telemedicine [6]. The longer-term question is how to integrate virtual care safely into routine services after emergency use.

Implementation barriers include connectivity, device access, digital literacy, workforce readiness, data protection, affordability, and interoperability. International reviews describe barriers at individual, organizational, financial, and regulatory levels [7]. Telehealth can reduce travel demands and improve scheduling flexibility, while

suitability varies across clinical encounters [8]. Digital health equity requires attention to who can access services and who may be excluded by language, geography, disability, cost, or connectivity [9].

In Indonesia, research on user adoption has examined technology acceptance, eHealth literacy, trust, and privacy [10]. Clinicians in Makassar reported opportunities for primary care and challenges involving workflows and system performance [11]. Indonesian studies have examined home-based rehabilitation for older people living with dementia [12] and communication and monitoring in midwifery [13]. Evidence from a review of telemedicine for patients with metabolic dysfunction-associated fatty liver disease illustrates its potential for chronic disease follow-up [14]. Analyses of Indonesian telemedicine platform data provide insight into patterns of use and consultation topics [15]. Research on privacy highlights the importance of protecting patient rights in remote care [16].

This review examines the implementation of telemedicine, identifies opportunities and challenges, and considers strategies relevant to the Indonesian health system. It synthesizes Indonesian and international evidence to address access, service quality, governance, and integration with routine care.

RESEARCH METHOD

The systematic literature review used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) as reporting guidance [17]. The source describes searches in PubMed, Scopus, ScienceDirect, Google Scholar, Garuda, and national journal databases. Search terms included telemedicine, telehealth, telemedicine implementation, digital health, virtual healthcare, access to healthcare, health services, opportunities, challenges, and Indonesia, combined using AND and OR.

The stated inclusion criteria covered full-text publications in Indonesian or English on implementation, use, acceptance, opportunities, or barriers in healthcare, with relevance to Indonesia. The methods state a 2020–2025 publication window. Duplicates, unrelated papers, purely technical work without service relevance, editorials, letters, opinions, inadequately reported conference papers, and publications without full text were excluded.

The source reports 512 initial records and 118 duplicates, leaving 394 for title and abstract screening. Of those, 96 progressed, and 51 remained after full-text availability and eligibility checks. The final selection, based on substantive fit, methodological quality, and relevance, yielded 30 records for narrative synthesis. Extraction covered country, design, service context, type of implementation, barriers, opportunities, and recommendations. The source does not provide database-specific search strings, search dates, an appraisal instrument, or a complete bibliographic key for all 30 article codes.

RESULTS AND DISCUSSION

Results

The source synthesis describes 30 articles, 15 focused on Indonesia and 15 providing international perspectives. It includes empirical research, feasibility studies, case studies, platform data analyses, systematic and rapid reviews, and conceptual articles. The studies cover primary care, maternal health, rehabilitation, chronic disease monitoring, community services, older adults, and care in remote areas.

The source reports a publication range of 2010–2025 in the results, whereas the stated eligibility window begins in 2020. Table 1 reproduces the source's characteristic counts and article codes, which require reconciliation where the counts and codes differ. Article codes are identifiers from the source extraction table. IEEE reference numbers indicate bibliographic citations in the main text.

Table 1. Characteristics of the source review articles

Characteristic	Category	n	Article codes
Geographical context	Indonesia	15	(1)–(15)
	United States	6	(16)–(22), (27)
	United Kingdom	1	(28)
	Italy	1	(29)
	Global or multicountry	7	(5), (22)–(27), (30)
Research focus	Implementation and adoption	6	(1), (2), (7), (9), (15), (23)
	Access and care in remote areas	3	(13), (14), (30)
	Specific services	4	(3), (4), (5), (26)
	Data and user experience	2	(6), (12)
	Privacy and regulation	1	(10)
	Health system transformation	5	(11), (17), (18), (19), (20)
	Benefits and barriers	4	(16), (22), (23), (27)
	Effectiveness and evidence	2	(21), (24)
	Pandemic implementation	3	(25), (26), (29)
Publication period	2010–2019	3	(16), (22), (23), (24)
	2020–2025	27	Most articles
Perspective	Patients, users, or community	7	(2), (3), (6), (8), (12), (13), (14)
	Healthcare workers or clinicians	4	(1), (4), (9), (10)
	Health systems or facilities	7	(5), (7), (11), (15), (17), (18), (19)

Characteristic	Category	n	Article codes
	Policy and regulation	2	(10), (15)
	Evidence and global reviews	10	(16), (21)–(30)

Earlier work in the review addressed effectiveness and benefits. Pandemic-era articles emphasized rapid adoption and continuity of care. Other studies considered sustained use, local capacity, privacy, and equity. Table 2 presents the source extraction summary.

Table 2. Telemedicine implementation, user experience, and barriers by article

Code	Title or topic	Setting	Focus	Key finding
(1)	Clinicians' Perceptions of a Telemedicine System [11]	Indonesia	Clinician views and primary care	Potential for primary care depends on clinician views, workflow, readiness, and technical barriers.
(2)	Factors Affecting Adoption of Telemedicine for Virtual Healthcare Services [10]	Indonesia	Adoption, UTAUT2, eHealth literacy, trust, privacy	Acceptance factors, eHealth literacy, trust, and user characteristics were associated with adoption.
(3)	Telehealth Home-Based Exercise for Older People with Dementia [12]	Indonesia	Older-adult rehabilitation	Home-based rehabilitation was feasible in the study context, with patient characteristics and technology use affecting implementation.
(4)	Exploration of Telemidwifery [13]	Indonesia	Midwifery	Remote care could support midwife–patient communication, information access, and pregnancy monitoring.
(5)	Telemedicine for Monitoring MAFLD [14]	Indonesia/global	Chronic disease	Remote monitoring can support continuity of care when visits are limited.
(6)	User Satisfaction and Challenges in Telemedicine Services	Indonesia	Satisfaction and barriers	Service quality, technology, and user experience are relevant to satisfaction and barriers.

Code	Title or topic	Setting	Focus	Key finding
(7)	Implementation of Telemedicine in Health Administration at Lopok Health Center	Indonesia	Primary care center	Access could improve, subject to user readiness, resources, infrastructure, and governance.
(8)	What We Know from Telemedicine Data in Indonesia? [15]	Indonesia	Platform data	Platform records can be analyzed for usage patterns, health topics, and user behavior.
(9)	Utilization and Perception of Telemedicine in Indonesia	Indonesia	Health workforce	Perceived benefits, staff readiness, facilities, and adaptation influence use.
(10)	Telemedicine in Indonesia During COVID-19: Patients' Privacy Rights [16]	Indonesia	Privacy and legal protection	Remote care requires attention to privacy and patient rights.
(11)	Smart City Achievement through Digital Health Services	Indonesia	Digital health	Digital services require infrastructure readiness and system integration.
(12)	Sentiment Analysis of Telemedicine App Reviews	Indonesia	App user experience	Reviews can reveal positive and negative aspects of app use.
(13)	Portable Health Clinic for Community Health Services	Indonesia	Remote communities	Portable clinics may extend healthcare access across geographic barriers.
(14)	Effectiveness of Mobile Health Services in Remote Papua	Indonesia	Remote access	Potential access gains depend on infrastructure and local conditions.
(15)	Telemedicine: Opportunities, Expectations, and Challenges in Indonesia	Indonesia	Opportunities and barriers	Access gains depend on regulation, infrastructure, workforce, and governance.

Code	Title or topic	Setting	Focus	Key finding
(16)	State of Telehealth	US/global	Telehealth development	Telehealth may widen access, subject to regulatory and integration challenges.
(17)	Virtually Perfect? Telemedicine for COVID-19 [3]	US	Pandemic response	Telemedicine helped support continuity when direct contact was restricted.
(18)	COVID-19 and Health Care's Digital Revolution [4]	US	Digital transformation	The pandemic accelerated digital adoption in healthcare.
(19)	Telehealth Transformation and the Rise of Virtual Care [5]	US	Virtual care transformation	Implementation requires organizational, workforce, and workflow changes.
(20)	COVID-19 Transforms Health Care through Telemedicine [6]	US	Implementation evidence	Rapid expansion changed how healthcare services were delivered.
(21)	Trends in Use of Telehealth During COVID-19	US	Usage trends	Telehealth use increased rapidly during the pandemic.
(22)	Current State of Telehealth Evidence	US/global	Effectiveness evidence	Benefits and effectiveness vary by service and implementation context.
(23)	Barriers to Adopting Telemedicine Worldwide [7]	Global	Adoption barriers	Barriers include technology, finance, regulation, organizations, staff, and users.
(24)	Effectiveness of Telemedicine	Global	Effectiveness	Potential benefits vary across clinical contexts and services.
(25)	Role of Telehealth During COVID-19	Global	Pandemic response	Telehealth helped maintain services during restrictions.
(26)	Telemedicine and Virtual Care for Remote Treatment	Global	Virtual care	Remote care could reduce some direct visits during a crisis.
(27)	Telehealth Benefits and Barriers [8]	US/global	Benefits and barriers	Access and flexibility benefits coexist with technology, literacy, regulatory, and clinical constraints.

Code	Title or topic	Setting	Focus	Key finding
(28)	Video Consultations for COVID-19	UK	Video consultation	Video consultations require adapted clinical workflows and attention to remote assessment limits.
(29)	Telemedicine During COVID-19 in Italy: A Missed Opportunity?	Italy	Pandemic implementation	System readiness and implementation barriers limited uptake.
(30)	Digital Health Equity and COVID-19 [9]	US/global	Equity	Limited digital access can widen existing disparities without appropriate support.

Discussion

Studies in Indonesia describe uses ranging from general consultation to primary care, midwifery, older-adult rehabilitation, chronic condition follow-up, and community outreach. Findings from Makassar show that clinician experience depends on how the technology fits routine work [11]. Indonesian adoption research links acceptance to factors involving digital literacy, trust, and privacy [10]. Telemedicine can make routine follow-up more flexible, while patients who need examination, urgent assessment, or procedures require access to in-person care [8].

Internet access, equipment availability, user readiness, and facility capacity affect whether a service can reach people in remote locations. Local implementation may call for telephone or low-bandwidth options, staff assistance, and clear referral routes. Where patients must provide their own devices and connectivity, programs should track whether the resulting patterns of access differ by geography or socioeconomic conditions [9]. Evidence from home-based exercise for older people with dementia illustrates the importance of feasibility in the intended population [12]. Tele-midwifery research offers examples of remote communication and monitoring functions [13].

COVID-19 accelerated virtual delivery by creating an immediate need to maintain service continuity [3]. Research on the pandemic response describes rapid uptake and organizational change [4]. Health systems also had to develop virtual workflows and support clinicians in using them [5]. Decisions about continuing these services should consider the clinical indication, the quality of communication, patient preferences, and the ability to escalate to in-person assessment.

Privacy safeguards concern the collection, storage, and exchange of patient information. Indonesian privacy research illustrates the relevance of patient rights in service design [16]. Implementation should specify consent and documentation processes, responsibility for follow-up, role-based access, and integration with electronic medical records. Reimbursement and quality standards also affect whether the service can operate routinely [2].

Platform data can help identify usage patterns and common consultation topics [15]. These data reflect people who reach and use the platform, so facility records and qualitative feedback are also important when evaluating coverage. Research on chronic disease monitoring points to the potential for remote follow-up in specific contexts [14]. The evidence base is heterogeneous across services and settings. Future work should compare hybrid models across urban and remote locations, measure long-term use and quality outcomes, and assess how system quality, trust, and digital literacy influence sustained participation.

CONCLUSION

Fundamental Finding: The systematic literature review of 30 articles found substantial potential for telemedicine to expand access, increase flexibility, and maintain continuity of healthcare, including for people in remote areas. Telemedicine implementation in Indonesia has expanded to primary care, rehabilitation, midwifery, chronic disease monitoring, and community services. **Implication:** Telemedicine should be developed as part of an integrated healthcare system through a hybrid care approach that retains face-to-face services. **Limitation:** The principal limitations include gaps in infrastructure and digital literacy, workforce readiness, communication quality, data security, privacy, regulation, and constraints on physical examination. **Future Research:** Future studies should use longitudinal, comparative, and mixed-methods designs to evaluate sustainability and differences in implementation between urban and remote areas. Structural equation modeling may also be considered to examine relationships among system quality, service quality, trust, satisfaction, digital literacy, and continued use.

REFERENCES

[1] World Health Organization, Global Strategy on Digital Health 2020–2025. Geneva, Switzerland: WHO, 2021. [Online]. Available: https://www.who.int/publications/i/item/9789240020924

[2] World Health Organization, Consolidated Telemedicine Implementation Guide. Geneva, Switzerland: WHO, 2022. [Online]. Available: https://www.who.int/publications/i/item/9789240059184

[3] J. E. Hollander and B. G. Carr, "Virtually perfect? Telemedicine for COVID-19," N. Engl. J. Med., vol. 382, no. 18, pp. 1679–1681, 2020, doi: 10.1056/NEJMp2003539.

[4] S. Keesara, A. Jonas, and K. Schulman, "COVID-19 and health care's digital revolution," N. Engl. J. Med., vol. 382, no. 23, Art. no. e82, 2020, doi: 10.1056/NEJMp2005835.

[5] J. Wosik et al., "Telehealth transformation: COVID-19 and the rise of virtual care," J. Am. Med. Inform. Assoc., vol. 27, no. 6, pp. 957–962, 2020, doi: 10.1093/jamia/ocaa067.

[6] D. M. Mann, J. Chen, R. Chunara, P. A. Testa, and O. Nov, "COVID-19 transforms health care through telemedicine: Evidence from the field," J. Am. Med. Inform. Assoc., vol. 27, no. 7, pp. 1132–1135, 2020, doi: 10.1093/jamia/ocaa072.

[7] C. S. Kruse, P. Karem, K. Shifflett, L. Vegi, K. Ravi, and M. Brooks, "Evaluating barriers to adopting telemedicine worldwide: A systematic review," J. Telemed. Telecare, vol. 24, no. 1, pp. 4–12, 2018, doi: 10.1177/1357633X16674087.

[8] S. N. Gajarawala and J. N. Pelkowski, "Telehealth benefits and barriers," J. Nurse Pract., vol. 17, no. 2, pp. 218–221, 2021, doi: 10.1016/j.nurpra.2020.09.013.
[9] A. Crawford and E. Serhal, "Digital health equity and COVID-19: The innovation curve cannot reinforce the social gradient of health," J. Med. Internet Res., vol. 22, no. 6, Art. no. e19361, 2020, doi: 10.2196/19361.
[10] R. Alviani, B. Purwandari, I. Eitiveni, and M. Purwaningsih, "Factors affecting adoption of telemedicine for virtual healthcare services in Indonesia," J. Inf. Syst. Eng. Bus. Intell., vol. 9, no. 1, pp. 47–69, 2023, doi: 10.20473/jisebi.9.1.47-69.
[11] D. Indria, M. Alajlani, and H. S. F. Fraser, "Clinicians perceptions of a telemedicine system: A mixed method study of Makassar City, Indonesia," BMC Med. Inform. Decis. Mak., vol. 20, Art. no. 233, 2020, doi: 10.1186/s12911-020-01234-7.
[12] Y. M. Sari, E. Burton, D. C. A. Lee, and K. D. Hill, "A telehealth home-based exercise program for community-dwelling older people with dementia in Indonesia: A feasibility study," Int. J. Environ. Res. Public Health, vol. 20, no. 4, Art. no. 3397, 2023, doi: 10.3390/ijerph20043397.
[13] A. G. Stellata, H. Gunardi, N. Sekarwana, and A. S. Raksanagara, "Exploration of telemidwifery: An initiation of application menu in Indonesia," Int. J. Environ. Res. Public Health, vol. 19, no. 17, Art. no. 10713, 2022, doi: 10.3390/ijerph191710713.
[14] F. N. Akbar, S. R. Choirida, A. Z. Muttaqin, F. Ekayanti, H. Nisa, and H. Hendarto, "Telemedicine as an option for monitoring metabolic dysfunction-associated fatty liver disease patients facing the COVID-19 pandemic: A systematic review and meta-analysis," J. Pers. Med., vol. 14, no. 3, Art. no. 281, 2024, doi: 10.3390/jpm14030281.
[15] F. N. Fuadina, N. W. K. Projo, and S. Mariyah, "What we know from telemedicine data in Indonesia? Study case using Alodokter, Dokter.id, and Honestdocs," in Proc. Int. Conf. Data Sci. Off. Stat., vol. 2021, no. 1, pp. 131–144, 2022, doi: 10.34123/icdsos.v2021i1.53.
[16] M. Fakih, "Telemedicine in Indonesia during the COVID-19 pandemic: Patients' privacy rights protection overview," Fiat Justisia J. Ilmu Hukum, vol. 16, no. 1, pp. 81–102, 2022, doi: 10.25041/fiatjustisia.v16no1.2583.
[17] M. J. Page et al., "The PRISMA 2020 statement: An updated guideline for reporting systematic reviews," BMJ, vol. 372, Art. no. n71, 2021, doi: 10.1136/bmj.n71.

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