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Patient Experience and User Satisfaction in Telemedicine Implementation in Indonesia: A Review of Service Quality, Trust, and Digital Health Challenges

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ABSTRACT

Objective: *This review aims to analyze the factors influencing user experience and satisfaction in telemedicine services and to identify implementation challenges in Indonesia.* ***Method:*** *This study employed a systematic literature review method following the PRISMA approach. Article searches were conducted across the PubMed, Scopus, ScienceDirect, Google Scholar, and Garuda databases using the keywords telemedicine, telehealth, patient satisfaction, patient experience, digital health, trust, service quality, and Indonesia. The selection process involved identification, duplicate removal, title and abstract screening, and full-text evaluation, yielding 30 articles that met the inclusion criteria. Data were extracted based on country, research method, service characteristics, satisfaction factors, barriers, and recommendations, and were subsequently analyzed using narrative-thematic synthesis.* ***Results:*** *The review results indicate that patient satisfaction with telemedicine is influenced by application ease of use, healthcare provider communication quality, response speed, information clarity, perceived service benefits, and a sense of security regarding data privacy. Trust serves as a critical component for the continued use of telemedicine, particularly concerning health information security and service provider credibility. Implementation challenges in Indonesia include digital literacy gaps, infrastructure limitations, variations in healthcare facility readiness, regulatory issues, and integration with electronic medical record systems. Strengthening telemedicine requires improving service quality, protecting patient data, developing user-oriented systems, training healthcare workers, and conducting periodic satisfaction evaluations.* ***Novelty:*** *Sustainable telemedicine implementation must position patient experience as a primary indicator of digital health service success.*

INTRODUCTION

Telemedicine has become a vital component of digital healthcare transformation because it enables patients to obtain medical consultations and health information without always visiting healthcare facilities in person. This growth accelerated rapidly during the COVID-19 pandemic when mobility restrictions reshaped interaction patterns between patients and healthcare professionals [1], [2]. Utilizing telemedicine offers opportunities to expand healthcare access, improve efficiency, reduce patient travel burdens, and support continuity of care for populations facing geographical or mobility constraints. Ultimately, the success of telemedicine services cannot be measured solely by user numbers or technological readiness, but also by the patient experience during care delivery and the resulting satisfaction levels [1], [3], [4].

Patient satisfaction in telemedicine is shaped through a complex experience throughout the digital care process. Application ease of use, speed of response, communication quality with healthcare providers, clarity of information, perceived benefits, and the system's ability to meet patient needs all determine service evaluations. Studies on telemedicine patient satisfaction demonstrate that patient-centered care and perceived health benefits are significantly associated with user satisfaction.

The quality of interaction during remote consultations is also integral to patient experience, as the lack of physical examination can affect perceptions of care quality [5], [6]. Furthermore, measuring telemedicine satisfaction faces methodological challenges because the instruments utilized across various studies remain inconsistent, necessitating a more standardized and contextual evaluation approach [7].

Trust represents a crucial dimension in the relationship between patients and telemedicine services because care is delivered through digital platforms that process private and sensitive health data. Patients consider not only the clinical competence of healthcare providers, but also data security, information confidentiality, provider credibility, and transparency in personal data management. Research on trust in telemedicine shows that data security and privacy play a central role in building user trust in digital health services [8]. Concerns regarding information security can hinder the acceptance and continued use of telemedicine, particularly when patients lack sufficient understanding of how their health data are collected, stored, and utilized [8], [9]. This demonstrates that patient experience in telemedicine encompasses not only consultation quality, but also a sense of safety when interacting with the digital health ecosystem.

The Indonesian context presents more complex challenges because telemedicine development occurs amidst unequal technological access and varying levels of readiness among communities and healthcare facilities. Internet connection quality, device ownership, technological proficiency, digital health literacy, and regional disparities directly affect patients' ability to benefit from telemedicine services [10], [11]. Studies on telemedicine adoption in Indonesia reveal that technological factors, perceived usefulness, trust, digital health literacy, and privacy concerns shape the acceptance of virtual care [10]. Implementation experiences in Indonesia also highlight that the readiness of healthcare workers and facilities is vital in determining digital service success [10], [12]. Consequently, patient satisfaction cannot be separated from the social, technological, and organizational environments in which telemedicine is deployed.

The service quality perspective provides a theoretical foundation for understanding the relationship between patient experience and telemedicine user satisfaction. The SERVQUAL model evaluates service quality across dimensions such as reliability, responsiveness, assurance, empathy, and tangibles, which in a digital context translate into system quality and user interaction experience. Similarly, the Technology Acceptance Model (TAM) explains that perceived usefulness and perceived ease of use drive technology acceptance. These perspectives are enriched by the concept of patient-centered care, which places patient needs, preferences, communication, and experiences at the core of healthcare delivery. Empirical research confirms that patient-centered care is one of the most influential dimensions driving satisfaction in telemedicine services [5], [13], [14].

Several previous studies have examined telemedicine utilization in Indonesia, yet evidence regarding patient satisfaction and experience remains scattered across different service contexts, platforms, user groups, and measurement approaches. Existing studies on telemedicine adoption in Indonesia primarily emphasize technology acceptance and trust, while other research examines user perceptions, privacy, service quality, and implementation barriers separately [8], [10], [15]. This highlights the need to integrate existing findings to identify factors that consistently shape patient experience and

satisfaction. Synthesizing international evidence is also necessary as a benchmark to understand Indonesia's position in telemedicine development and to identify adaptable factors suited to the national health system [7], [16].

The urgency of this review lies in ensuring that digital health transformation focuses not only on technological development, but also on delivering services that are accepted, trusted, and perceived as beneficial by patients. Improving user satisfaction serves as an essential indicator for evaluating telemedicine implementation success while reflecting its long-term sustainability. Strengthening telemedicine in Indonesia should focus on user-oriented system design, clinical communication quality, data protection and privacy, digital literacy enhancement, and integration with electronic medical records and the national digital health ecosystem [10], [17]. This review aims to analyze the factors influencing user experience and satisfaction in telemedicine services and to identify implementation challenges in Indonesia. The findings are expected to serve as a foundation for developing telemedicine services that are more patient-centered, secure, high-quality, inclusive, and sustainable [8], [10], [17].

RESEARCH METHODS

This study utilized a systematic literature review method following the PRISMA approach to identify and synthesize evidence regarding user experience and satisfaction in telemedicine implementation, particularly within the Indonesian context. Literature searches were conducted across PubMed, Scopus, ScienceDirect, Google Scholar, and Garuda using combinations of the keywords *telemedicine*, *telehealth*, *patient satisfaction*, *patient experience*, *digital health*, *trust*, *service quality*, and *Indonesia* with the Boolean operators AND and OR.

Inclusion criteria comprised research articles and scientific reviews discussing telemedicine implementation, patient satisfaction, user experience, service quality, trust, acceptance, or telemedicine service challenges; published in Indonesian or English; available in full text; and published between 2020 and 2025 (with foundational pre-2020 reviews included for baseline context). Exclusion criteria included duplicate articles, studies unrelated to telemedicine services, articles focusing solely on technical aspects without patient or user perspectives, editorials, letters to the editor, opinion pieces, conference proceedings without full text, and articles irrelevant to the review objectives.

The selection process proceeded in stages: 428 articles were initially retrieved across all databases, and 96 duplicates were removed, leaving 332 articles. Subsequent title and abstract screening yielded 87 relevant articles for further review. Full-text assessment based on topic alignment, inclusion and exclusion criteria, and completeness of research information narrowed the selection to 42 articles. Finally, methodological quality and relevance appraisals resulted in 30 articles that met all criteria for narrative-thematic synthesis.

RESULTS AND DISCUSSION

Result

A total of 30 articles were analyzed to identify patient experience, user satisfaction, service quality, trust, acceptance, and implementation challenges in telemedicine. The reviewed articles encompass publications from Indonesia and several other countries representing global telemedicine contexts. Geographically, 10 articles focused on Indonesia, while 20 articles originated from international contexts or examined telemedicine globally. Publication years spanned from 2010 to 2024, with the majority

published during the COVID-19 pandemic and post-pandemic periods. Research foci varied across patient satisfaction, user experience, technology acceptance, trust, privacy, service quality, effectiveness, and implementation barriers.

Table 1. Characteristics of Reviewed Articles

Characteristic	Category	Σ	Article Code
Country or Context	Indonesia	10	(1) to (10)
	Global or Multi-country	10	(11), (12), (13), (20), (21), (22), (23), (28), (29), (30)
	United States	5	(15), (16), (17), (18), (19)
	United Kingdom	1	(14)
	Australia	1	(24)
	China	2	(25), (27)
	South Korea	1	(26)
Publication Period	2010 to 2019	4	(12), (13), (20), (21)
	2020 to 2024	26	(1) to (11), (14) to (19), (22), (23), (25) to (30)
Primary Focus	Patient or user satisfaction	6	(1), (7), (11), (13), (24), (30)
	Telemedicine acceptance and adoption	5	(2), (8), (12), (23), (27)
	User perception and experience	5	(3), (5), (6), (14), (26)
	Trust and privacy	3	(4), (9), (28)
	Service quality and effectiveness	4	(20), (21), (29), (30)
	Service implementation and transformation	5	(16), (17), (18), (19), (22)
	Telehealth barriers and benefits	2	(15), (25)

Characteristic	Category	Σ	Article Code
Service Context	General telemedicine or virtual consultation	15	(1), (2), (5), (7), (8), (9), (11), (12), (13), (14), (16), (18), (23), (27), (30)
	Digital health services	4	(6), (10), (17), (26)
	Telehealth	5	(15), (19), (20), (22), (28)
	Privacy and information security	2	(4), (9)
	Service quality and evaluation	4	(21), (24), (25), (29)

Overall, the article characteristics indicate that telemedicine literature expanded rapidly during the COVID-19 pandemic. The surge in publications during this period demonstrates that the pandemic acted as a major catalyst in accelerating virtual care adoption [1], [2], [4], [18]. Articles focusing on Indonesia predominantly addressed technology acceptance, user perception, trust, privacy, and implementation barriers [8], [10], [11], [12], [15]. In contrast, international literature provided broader coverage regarding service quality, clinical effectiveness, satisfaction, patient experience, and continued telemedicine usage [1], [4], [5], [6], [7], [16].

Table 2. User Perceptions, Satisfaction, and Challenges in Telemedicine

Code	Article Focus	Country/Context	Key Findings Relevant to the Review
Article (1)	Telemedicine satisfaction and challenges	Indonesia	User satisfaction is influenced by ease of access and service quality, whereas challenges relate to technological limitations, communication quality, and user readiness.
Article (2)	Telemedicine adoption, trust, and privacy	Indonesia	Service acceptance is driven by perceived usefulness, ease of use, digital health literacy, trust, and privacy concerns.
Article (3)	User perceptions of telemedicine systems	Indonesia	Perceived system usefulness and healthcare worker readiness are critical factors in

Code	Article Focus	Country/Context	Key Findings Relevant to the Review
			primary care telemedicine implementation.
Article (4)	Patient privacy	Indonesia	Privacy protection and health information confidentiality are vital for building trust in telemedicine.
Article (5)	Telemedicine utilization and perception	Indonesia	Telemedicine acceptance is shaped by service benefits, ease of access, user readiness, and limitations in direct interaction.
Article (6)	Application user data and experience	Indonesia	Application usage data reveal user interaction patterns that can be utilized to evaluate user experience and needs.
Article (7)	Patient satisfaction	Indonesia	Patient satisfaction correlates with consultation experience, communication quality, service convenience, and the ability to meet patient needs.
Article (8)	Acceptance based on TAM	Indonesia	Perceived usefulness and perceived ease of use play significant roles in telemedicine technology acceptance.
Article (9)	User trust	Indonesia	Trust is a primary determinant in the decision to use telemedicine and is linked to perceived security and provider credibility.
Article (10)	Digital health patient experience	Indonesia	Patient experience is influenced by digital interaction quality, ease of use, accessibility, and service integration.

Code	Article Focus	Country/Context	Key Findings Relevant to the Review
Article (11)	Telemedicine satisfaction	Global	Patient satisfaction relates to service quality, ease of access, communication, and perceived benefits.
Article (12)	Adoption barriers	Global	Telemedicine barriers encompass technological, organizational, regulatory, digital literacy, and user acceptance aspects.
Article (13)	Patient satisfaction	Global	Patient satisfaction serves as a key indicator in evaluating telemedicine service success.
Article (14)	Video consultations	United Kingdom	Video consultation experience is affected by communication quality, patient readiness, and provider adaptability to remote care.
Article (15)	Telehealth benefits and barriers	United States	Telehealth offers access and flexibility benefits, but faces technological, literacy, regulatory, and interaction barriers.
Article (16)	Telemedicine transformation	United States	The pandemic accelerated telemedicine transformation and reshaped patient-provider relationship patterns.
Article (17)	Virtual care transformation	United States	Virtual care implementation requires organizational change, system readiness, technology integration, and clinician adaptation.
Article (18)	Telemedicine and healthcare delivery	United States	Telemedicine expands service access, though user experience quality depends on system readiness and patient characteristics.

Code	Article Focus	Country/Context	Key Findings Relevant to the Review
Article (19)	Telehealth utilization trends	United States	Telehealth utilization surged significantly during the pandemic, demonstrating acceptance of virtual care models.
Article (20)	Telehealth evidence	Global	Evidence of telehealth effectiveness shows potential benefits in expanding access, though outcomes vary by service context.
Article (21)	Telemedicine effectiveness	Global	Telemedicine effectiveness is influenced by service type, patient characteristics, technology, and implementation context.
Article (22)	Role of telehealth during the pandemic	Global	Telehealth maintains care continuity when face-to-face access is restricted.
Article (23)	Virtual care	Global	Virtual care serves as an effective remote alternative, particularly when direct facility access is limited.
Article (24)	Satisfaction in rural areas	Australia	Telemedicine has strong potential to improve access and patient satisfaction in regions with limited healthcare facilities.
Article (25)	Satisfaction factors	China	User satisfaction is driven by service quality, ease of use, trust, and perceived benefits.
Article (26)	Digital health experience	South Korea	User experience is shaped by system quality, ease of interaction, and the digital service's ability to fulfill patient needs.

Code	Article Focus	Country/Context	Key Findings Relevant to the Review
Article (27)	Adoption and continuance usage	China	Continued telemedicine usage is influenced by satisfaction, perceived benefits, trust, and prior experience.
Article (28)	Trust and privacy	Global	Data security, privacy, and trust are critical determinants in telehealth acceptance.
Article (29)	SERVQUAL service quality	Global	Service quality is a major determinant of user satisfaction and can be evaluated via reliability, responsiveness, assurance, and empathy.
Article (30)	Patient-centered telemedicine	Global	A patient-centered approach is essential for fostering positive experiences and increasing user satisfaction.

Synthesis and Thematic Discussion

The synthesis of the 30 articles demonstrates that patient satisfaction is a primary indicator for evaluating telemedicine implementation success. Articles (1), (7), (11), (13), (24), and (30) directly position satisfaction as a core component of service evaluation, while Articles (2), (5), (8), (25), and (27) show that satisfaction is closely tied to technology acceptance and continuance intention. Consistent findings across diverse contexts reveal that telemedicine success cannot be measured merely by consultation volume or application downloads [4], [7]. Instead, patient experience throughout the care process determines whether patients are willing to reuse the service. This indicates that satisfaction in telemedicine is the outcome of an interaction between technological quality and the human care quality delivered through that technology [5], [6], reinforcing the view that telemedicine must be developed with the patient at the center of evaluation rather than merely as an end-user of an application [5].

Articles (1), (3), (5), (7), (10), (14), (25), (26), (29), and (30) exhibit a consistent pattern regarding the relationship between service quality and patient experience. System ease of use, response speed, communication quality, information clarity, service reliability, and the ability of healthcare workers to understand patient needs emerge repeatedly across studies [6], [11], [12]. Differences appear in the specific emphasis of each study: Article (29) emphasizes service quality through structured evaluation frameworks, whereas Article (30) positions patient-centered care as the foundation of patient experience [5]. Article (14) highlights the importance of communication skills in video consultations, while Article (10) focuses on patient experience within a broader digital service ecosystem. Together, these findings show that telemedicine quality is

multidimensional; an easy-to-use platform will not generate satisfaction if clinical communication is ineffective, and competent clinicians face limitations if the digital system is unstable or difficult to navigate [12], [18].

Trust emerges prominently in Articles (2), (4), (9), (25), (27), and (28). In telemedicine, patients must place trust in two components simultaneously: the healthcare provider and the digital system transmitting sensitive health information [8]. This differs from in-person care, where patients can directly observe the care process and clinical environment. Articles (4) and (28) specifically emphasize that privacy and information security are foundational to building trust [8], [9]. Articles (2) and (9) further demonstrate that trust directly impacts patients' decisions to adopt and continue using telemedicine [8], [10]. Therefore, patient satisfaction cannot be separated from perceived security. Even when a service is fast and convenient, concerns over personal data misuse can erode trust and impede sustained utilization [8], [16]. Telemedicine development in Indonesia must therefore treat data protection as an integral part of the patient experience rather than merely a technical or administrative requirement [8], [17].

Articles (1) through (10), which focus on Indonesia, reveal that telemedicine challenges stem not only from technology, but also from the broader healthcare ecosystem. Limited digital infrastructure, varying levels of digital health literacy, clinician readiness, privacy concerns, trust, and system integration are recurring issues [10], [11], [12], [15]. Global studies—such as Articles (15), (20), (21), (22), and (23)—report similar barriers, though their severity and characteristics vary across countries [1], [16], [19]. Article (24) illustrates that telemedicine yields substantial benefits in rural areas by overcoming geographical barriers, while Articles (25), (26), and (27) show that even technologically advanced nations continue to face challenges regarding experience quality, satisfaction, and sustained usage. While telemedicine challenges are universal, mitigation strategies must be tailored to local health systems and population demographics. Indonesia requires an approach that adapts international models to address regional digital divides and varying facility capacities [10], [11], [12].

Articles (14), (16), (17), (18), (19), and (22) demonstrate that the COVID-19 pandemic served as a critical momentum for accelerating telemedicine adoption [1], [2], [4], [18]. Restrictions on face-to-face interactions compelled patients and clinicians to embrace remote consultations as a viable care alternative. The surge in telehealth utilization during this period confirmed that communities readily adopt technology when there is a pressing need and supportive conditions [2], [18]. Articles (16), (17), and (18) further indicate that these shifts reshaped how healthcare facilities organize service delivery [2], [18]. The subsequent challenge is whether these utilization patterns can be sustained post-pandemic. Article (27) provides key insight into this issue, showing that continuance intention depends on satisfaction, perceived usefulness, trust, and prior positive experiences. Sustainability cannot rely solely on pandemic momentum; services must deliver consistent experiences and tangible benefits to give patients compelling reasons to continue using them [4], [17].

The primary advantages of telemedicine identified across Articles (1), (5), (11), (15), (18), (20), (21), (23), and (24) include expanding care access, reducing geographical barriers, enhancing flexibility, saving travel time, and supporting continuity of care [1], [2], [4], [19], [20]. These benefits are highly relevant for Indonesia given its vast archipelago and uneven distribution of healthcare facilities [10], [11]. Telemedicine also serves as a vital support tool for patients with limited mobility or those requiring follow-

up consultations. Conversely, limitations highlighted in Articles (3), (4), (12), (14), (15), (20), (22), and (28) center on the inability to perform physical examinations, connectivity issues, digital literacy gaps, data security risks, privacy concerns, and reduced interpersonal interaction [1], [8], [12], [16], [19]. Consequently, telemedicine should not be positioned as a complete replacement for in-person care, but rather integrated into a hybrid care model that provides digital access when clinically appropriate while preserving in-person visits when physical examinations or procedures are required [4], [18].

Based on the synthesis of Articles (1) through (30), future research should move beyond measuring basic satisfaction scores toward deeper investigations of the relationships among patient experience, service quality, trust, data security, and continuance intention. Research in Indonesia needs to develop standardized telemedicine satisfaction instruments that integrate service quality, system quality, patient-centered care, trust, privacy, and digital health literacy, as reflected in Articles (2), (7), (8), (10), (25), (27), (29), and (30) [5], [7], [8], [10]. Longitudinal studies are also needed to evaluate whether initial satisfaction predicts long-term telemedicine retention, alongside comparative studies between urban and rural areas to assess the impact of digital divides on patient experience [10], [11]. Future studies could formulate conceptual models testing the links between system quality, information quality, interaction quality, trust, privacy, satisfaction, and continuance intention. Quantitative approaches using Structural Equation Modeling (SEM) can test these structural relationships, while qualitative methods can capture nuanced patient experiences. Combining both approaches will yield a comprehensive understanding of the determinants of telemedicine success in Indonesia [12].

Overall, the 30 reviewed articles confirm that patient satisfaction in telemedicine is the product of interactions among technological quality, service quality, communication experience, trust, privacy, and perceived benefits. Articles (1) through (10) underscore Indonesia's specific challenges regarding digital ecosystem readiness [10], [11], [12], while Articles (11) through (30) provide international benchmarks demonstrating that issues of quality, trust, access, and sustainability are shared globally [1], [5], [7], [16]. Across all literature, user experience remains the primary determinant of telemedicine acceptance and sustainability, whereas differences stem from health system structures, technological readiness, measurement tools, and user demographics. Successful telemedicine is not merely a functional application, but a healthcare service that delivers an accessible, secure, trusted, high-quality experience that genuinely meets patient needs [5], [8], [17].

CONCLUSION

Fundamental Finding: This review of 30 articles demonstrates that patient experience and satisfaction are critical determinants of the successful implementation and sustainability of telemedicine services. User satisfaction is shaped not only by ease of access and technological usability, but also by patient-provider communication quality, response speed, information clarity, perceived usefulness, system quality, and the service's capacity to fulfill patient needs. Trust, privacy, and data security are increasingly vital because telemedicine involves managing sensitive health information. In Indonesia, telemedicine offers substantial potential to expand healthcare access and enhance service flexibility, yet it continues to face challenges including digital infrastructure gaps, varying digital health literacy, facility and clinician readiness, data

security, system integration, and diverse user acceptance. **Implication:** Telemedicine must therefore be developed as a patient-centered component of healthcare that is fully integrated with Electronic Medical Records (EMR) and the national digital health ecosystem. **Limitation:** This study is limited by its reliance on a review of 30 articles, which may not fully capture the diversity of patient experiences and satisfaction across different telemedicine settings in Indonesia. Differences in research methods, measurement instruments, geographical coverage, and patient characteristics across the reviewed studies may also limit the comparability and generalizability of the findings. Furthermore, the study does not involve primary data collection to directly validate the relationships among service quality, trust, privacy, patient satisfaction, and continued telemedicine usage. **Future Research:** Future research should develop and validate standardized measurement instruments for assessing patient experience and satisfaction with telemedicine services in the Indonesian context. Longitudinal and comparative studies involving urban and rural populations are needed to examine how service quality, digital literacy, trust, privacy, and data security influence patient satisfaction and continued usage. Further studies should also employ mixed-methods approaches and Structural Equation Modeling (SEM) to investigate the relationships among these factors, particularly among vulnerable populations such as older adults and residents in remote areas.

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