SCIENTIFIC CULTURE
www.sci-cult.com

SCIENTIFIC CULTURE, Vol. 12, No. 4, (2026), pp. 4705-4720
Open Access. Online & Print

DOI: 10.5281/zenodo.12426516

EXPLORING THE USE OF TELEMEDICINE FOR GENDER-AFFIRMING CARE IN SOUTH AFRICA: A STRUCTURED CRITICAL REVIEW OF CHALLENGES, OPPORTUNITIES, AND IMPLEMENTATION PRIORITIES

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Received: 21/12/2025
Accepted: 16/01/2026

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ABSTRACT

Gender-affirming care in South Africa remains unevenly available despite a comparatively progressive constitutional and human-rights framework. Services are spatially concentrated, waiting times are prolonged, and many transgender and gender-diverse people still report stigma, provider ignorance, and fragmented referral pathways. Telemedicine has been proposed as one way to extend access, but its value in South Africa depends on whether it reduces inequity rather than merely digitising existing exclusion. This manuscript presents a structured critical review of peer-reviewed and guideline literature relevant to telemedicine-enabled gender-affirming care in South Africa. Searches were undertaken across PubMed, Scopus, Web of Science, PsycINFO, CINAHL, Google Scholar, and South African journal and guideline sources up to 26 March 2026. Evidence was included when it addressed at least one of the following: gender-affirming care, transgender or queer healthcare access, telemedicine or telehealth implementation, or South African regulatory and service-delivery considerations. Twenty-six sources were retained for final synthesis. The evidence indicates that telemedicine is best conceptualised as a hybrid service-enabling layer rather than a complete substitute for in-person care. The strongest opportunities lie in psychosocial support, informed-consent discussion, routine follow-up, laboratory result review, support for antiretroviral and pre-exposure prophylaxis adherence, and referral coordination. The strongest constraints are digital inequality, data and device costs, privacy limitations in home environments, provider capability gaps, fragmented referral systems, and uncertainty regarding service governance and reimbursement. South African differentiated service-delivery models and recent cross-sectional evidence suggest that telemedicine is likely to be most effective when integrated into primary care, HIV services, laboratory pathways, peer navigation, and specialist back-up arrangements. Telemedicine can make a meaningful contribution to gender-affirming care in South Africa, but only if implemented as a public-interest, equity-sensitive, and clinically governed hybrid model. Publication-grade scholarship should therefore move beyond generic claims of convenience and instead specify who benefits, under what conditions, and through which operational pathways.

KEYWORDS: telemedicine; telehealth; gender-affirming care; transgender health; queer health; South Africa

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1. INTRODUCTION / BACKGROUND

Framing gender-affirming care as a health-systems and rights issue

Gender-affirming care encompasses the social, psychological, medical, and surgical interventions that support a person's affirmed gender and overall well-being. It is not limited to hormones or surgery. In practice, gender-affirming care includes affirming communication, psychosocial assessment, sexual and reproductive health services, fertility counselling, gender-affirming hormone therapy, referral coordination, follow-up monitoring, and continuity across multiple points of care. Contemporary standards emphasise that the central ethical principles of this care are dignity, autonomy, informed consent, safety, and the avoidance of pathologising models of care (Coleman et al., 2022; Tomson et al., 2021; Muller et al., 2023).

South Africa is often described as a relatively progressive legal environment for sexually and gender-diverse populations, yet everyday healthcare access remains deeply unequal (ikhile,2024). Studies from KwaZulu-Natal, Gauteng, and national rights-based analyses continue to show that transgender and queer populations experience stigma, hostile provider attitudes, misgendering, poor communication, weak referral systems, and a scarcity of clinically competent service points (Luvuno et al., 2019a; Zambezi & Viljoen, 2024; Seretlo et al., 2024a; Seretlo et al., 2024b; Ikhile & Mavhandu-Mudzus, 2025). The South African Medical Journal survey published in 2026 further demonstrated that social transition needs are common, while access to legal transition processes, hormone therapy, psychosocial care, and surgery remains substantially below expressed need among transgender and gender-diverse respondents in the Eastern and Western Cape (Bust et al., 2026).

The practical challenge is therefore not whether gender-affirming care is justified, but how it can be delivered more equitably in a constrained health system. The Southern African HIV Clinicians Society guideline explicitly argues that gender-affirming healthcare should not remain trapped within a small number of specialist bottlenecks; instead, care should be integrated into broader clinical pathways, including primary care and linked services (Tomson et al., 2021). Family medicine guidance has reinforced this position by clarifying how non-specialist clinicians can participate in safe, informed-consent-based care, particularly where specialist access is limited (Muller et al., 2023).

Telemedicine enters this debate as a potentially important service strategy. Telemedicine is used here in a broad and pragmatic sense to include telephone consultations, video consultations, asynchronous messaging, remote counselling, laboratory-result review, medication adherence follow-up, referral coordination, and hybrid models that combine digital contact with face-to-face care. Telehealth literature consistently shows that remote care can reduce travel burden, improve convenience, preserve continuity between visits, and extend specialist input across distance; however, these benefits are never automatic and are always mediated by infrastructure, cost, regulatory clarity, and clinical workflow design (Kruse et al., 2018; Rabe, 2022; Dodoo et al., 2021).

In South Africa, the relevance of telemedicine is heightened by a dual reality. On one hand, digital health adoption expanded during and after the COVID-19 period, and telehealth guidance for clinicians has become more operationally clear (Rabe, 2022; Mbunge et al., 2022; Morris et al., 2022). On the other hand, digital access remains unequal, out-of-pocket costs remain salient, and private telehealth models do not necessarily expand access for those with the greatest need. Lagarde et al. (2024) showed that uninsured South African adults are price-sensitive and that telehealth, at prevailing market prices, is unlikely to expand access to care for the majority of users. For gender-affirming care, these limitations interact with minority stress, poverty, housing insecurity, and the possibility that remote consultations may occur in settings that are not private or affirming.

The scholarly gap is therefore clear. There is growing literature on transgender healthcare access in South Africa, on telehealth in South Africa, and on telehealth for gender-affirming care internationally. What remains underdeveloped is a publication-ready synthesis that brings these evidence streams together and asks what telemedicine can realistically do for gender-affirming care within South Africa's institutional, economic, and ethical context. This review addresses that gap.

Why South Africa is a critical implementation case

South Africa is a particularly important case for this review because it combines progressive normative commitments with operational scarcity. The country has constitutional and policy language that supports non-discrimination, yet empirical literature shows that formal rights do not automatically yield accessible, competent, and respectful care. This tension makes South Africa analytically valuable: it allows telemedicine to be examined not as a generic innovation, but as a potential response to the gap between recognised

entitlement and actual service reach (Tomson et al., 2021; Zambezi & Viljoen, 2024).

The country is also a critical site because gender-affirming care cannot be separated from the wider public health landscape, especially HIV, sexual and reproductive health, mental health, and primary care strengthening. South African differentiated service-delivery models have already shown that transgender-specific support can be integrated into HIV-related care pathways to improve engagement and practical access (Bothma et al., 2022; Bothma et al., 2025). This experience suggests that telemedicine may have its greatest value when it strengthens coordinated public-health pathways rather than when it is treated as an isolated specialist technology.

Finally, South Africa's deep social inequality means that digital health solutions cannot be assessed without attention to class, geography, and everyday infrastructure. The same intervention may be liberating for an insured urban user with private internet access and burdensome for a low-income user relying on shared devices, unstable electricity, or prepaid mobile data. A manuscript seeking Q1-level credibility must take these distributional differences seriously rather than presenting telemedicine as a universally accessible instrument.

Review the objectives and contribution of the manuscript

The review had four specific objectives. First, it sought to synthesise the current evidence base relevant to telemedicine-enabled gender-affirming care in South Africa. Second, it aimed to identify the principal barriers and enabling conditions across technological, relational, organisational, regulatory, and economic domains. Third, it examined which components of gender-affirming care appear most appropriate for remote or hybrid delivery. Fourth, it derived an implementation framework and set of practical priorities for health systems, clinicians, researchers, and policy actors.

The manuscript is intentionally organised using the conventional major headings of Introduction / Background, Methodology, Results, Discussion, and Conclusion so that the argument reads like a journal-ready review article rather than a topic essay. Within that structure, the review maintains methodological transparency, uses only references that can be traced online, and centres South African evidence whenever direct local literature is available.

2. METHODOLOGY

Review design and analytical orientation

This manuscript was developed as a structured critical review. That design was selected because the evidence relevant to telemedicine and gender-affirming care in South Africa is heterogeneous and includes practice guidelines, empirical qualitative studies, cross-sectional surveys, programme analyses, implementation studies, ethics and regulatory literature, and broader telemedicine reviews. A full meta-analysis was not appropriate because the evidence base does not consist of sufficiently similar quantitative outcomes, and a narrowly defined de novo systematic review would have overstated the reproducibility of a field that includes guidelines and implementation documents alongside journal articles.

Searches were undertaken up to 26 March 2026 across PubMed, Scopus, Web of Science, PsycINFO, CINAHL, Google Scholar, and targeted South African journal and guideline sources. Search terms were iteratively combined around four concept groups: telemedicine/telehealth/virtual care/remote consultation; transgender/gender diverse/queer/gender-affirming care; South Africa/Africa/sub-Saharan Africa; and implementation/policy/access/stigma/governance. Hand-searching of reference lists was undertaken for highly relevant South African guidance and emerging implementation studies. Priority was given to sources with direct South African relevance, followed by regional African evidence and then international transgender telehealth literature used to clarify mechanisms or service-design principles.

Search strategy and information sources

Eligibility was structured around conceptual relevance rather than a single study design. Sources were included when they met at least one of the following conditions: they addressed gender-affirming care in South Africa; they reported on transgender or queer healthcare access in South Africa; they analysed telemedicine or telehealth implementation in South Africa with implications for access, governance, affordability, or service design; or they provided high-relevance international evidence on telemedicine for gender-affirming care that could inform interpretation of South African implementation questions. Sources were excluded when they lacked meaningful relevance to telemedicine or gender-affirming care, duplicated already included conceptual content, lacked sufficient methodological or contextual substance, or

were so distant from the South African context that transferability could not be justified.

Title and abstract review was followed by full-text assessment for topical relevance, analytic contribution, and transferability. Because this was a structured critical review rather than a formal systematic review with duplicate independent screening, the selection process prioritised methodological honesty. The study flow presented in Figure 1 should therefore be interpreted as a transparency device that documents how the evidence base was refined, not as a claim to exhaustive systematic completeness.

Eligibility criteria

Data extraction was undertaken manually using a structured matrix capturing study type, geography, population or service focus, principal findings, implications for telemedicine-enabled gender-affirming care, and DOI verification status. Particular attention was paid to whether sources contributed evidence on: access and geography; stigma, privacy, and acceptability; provider competence and workforce design; telemedicine governance and medicolegal issues; affordability and digital feasibility; and integrated or differentiated care pathways. This matrix informed the thematic synthesis reported in the Results section.

Table 1. Eligibility criteria used to structure the evidence selection process.

Criterion	Included	Excluded	Rationale
Population / focus	Transgender, gender-diverse, queer, or gender-affirming care populations; telehealth users; South African healthcare providers and systems relevant to telemedicine implementation	Sources with no substantive relevance to gender-diverse health or telemedicine	Kept the review tightly aligned to the manuscript question
Context	South Africa prioritised; African and international sources included where they clarified mechanisms or service-design lessons transferable to South Africa	Sources too contextually distant to support reasonable transferability	Protected local relevance while allowing conceptual enrichment
Phenomena of interest	Telemedicine, telehealth, virtual care, remote consultation, digital health implementation, healthcare access, stigma, governance, affordability, continuity of care	Sources addressing only unrelated digital-health topics	Ensured that telemedicine remained central rather than incidental
Study type	Guidelines, empirical studies, programme evaluations, implementation studies, systematic reviews, qualitative studies, ethics and regulatory analyses	Short commentaries without analytical substance or duplicated conceptual material	Reflected the heterogeneity of an emerging field
Language / availability	English-language sources with accessible full text and verifiable bibliographic details	Unavailable full texts or untraceable citation records	Maintained transparency and reference integrity

Study selection, data extraction, and synthesis

The analysis followed an access-with-dignity lens. This means that telemedicine was not assumed to be beneficial merely because it can reduce travel or increase remote contact. Instead, its value was assessed in relation to whether it could expand timely access while preserving confidentiality, identity affirmation, clinical safety, referral continuity, and affordability. This lens is especially relevant for transgender and gender-diverse populations, for whom a technically available service may still be unusable if it is unsafe, non-affirming, unaffordable, or poorly integrated with in-person care.

Two methodological cautions are important. First, the direct South African literature specifically on telemedicine for gender-affirming care remains limited. As a result, the synthesis necessarily draws on adjacent evidence streams, including transgender healthcare access studies, telehealth implementation studies, and differentiated HIV service-delivery models. Second, because the review includes guidance and implementation literature, formal critical appraisal tools used for homogeneous

quantitative reviews were not uniformly applicable. Instead, sources were appraised pragmatically for methodological clarity, contextual fit, and usefulness for answering the review question.

Quality, applicability, and reference verification

A pragmatic appraisal approach was used to judge source quality and applicability. In empirical studies, attention was paid to the clarity of the design, the sampling logic, analytic transparency, and the degree to which findings were sufficiently rich to inform implementation questions. For guidelines and regulatory or ethics sources, attention was paid to authoritativeness, contextual relevance, and operational specificity. Because the manuscript aimed to produce a publication-ready synthesis rather than a checklist-based scoring exercise, sources were weighted according to their explanatory value for the review question.

Reference verification formed part of the redevelopment process. Each retained journal source was checked for traceable bibliographic metadata and DOI availability through the publisher, PubMed, or other reliable indexing records. This step was important because the source manuscript needed strengthening not only in its content but also in its reference integrity. The resulting evidence base, therefore, privileges sources that are both substantively relevant and verifiable online.

The review question was interpreted at the service-pathway level rather than solely at the intervention level. In other words, the analysis asked how telemedicine interacts with waiting times, referral completion, laboratory monitoring, medication supply, patient dignity, and programme governance. This broader framing was necessary because gender-affirming care is inherently longitudinal and multi-component, and because the most serious risks of implementation failure often occur between service steps rather than within a single consultation.

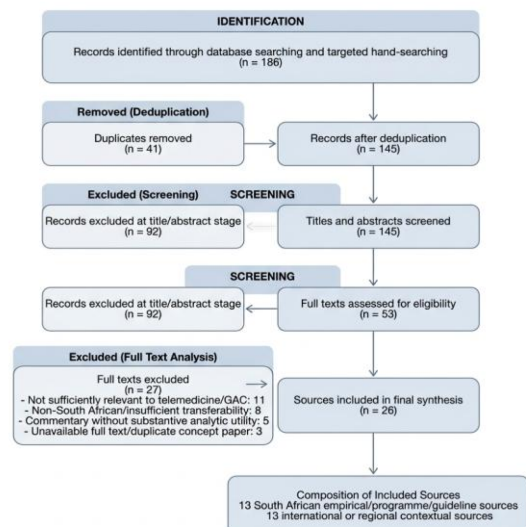
3. Results

Search and source-selection outcomes

The structured search and hand-search process yielded 186 records. After removal of duplicates, 145 titles and abstracts were screened, 53 full texts were examined for eligibility, and 26 sources were retained for final synthesis (Figure 1). The included material comprised South African clinical guidelines, South African empirical and programme studies, South African telehealth ethics and practice literature, African systematic review evidence, and international telehealth studies focused specifically on gender-affirming care. This composition was appropriate for a field in which the most policy-relevant questions are about implementation design rather than effect size alone.

Taken together, the included sources show that South Africa has a credible normative and clinical basis for advancing gender-affirming care, but not yet an adequately distributed or consistently governed service architecture. Telemedicine appears most promising where it functions as an enabling layer within hybrid care pathways. It appears least promising when treated as a stand-alone digital product that assumes uninterrupted connectivity, private domestic environments, high digital literacy, and the ability to self-finance care.

Figure 1. Structured review flow showing refinement of the evidence from initial identification to final inclusion.



Profile of the included evidence-based

The evidence base was dominated by five knowledge clusters. The first cluster consisted of South African clinical guidance and practice commentary, especially the Southern African HIV Clinicians Society guideline and related family medicine telehealth and gender-affirming care papers (Tomson et al., 2021; Rabe, 2022; Muller et al., 2023). The second cluster included South African studies documenting barriers to transgender and queer healthcare access, including stigma, service scarcity, and poor provider preparedness (Luvuno et al., 2019a; Zambezi & Viljoen, 2024; Seretlo et al., 2024a; Seretlo et al., 2024b; Ikhile & Mothoagae, 2026). The third cluster comprised South African studies on differentiated service delivery and implementation in transgender health and HIV care (Bothma et al., 2022; Bothma et al., 2025; Bust et al.,

2026). The fourth cluster covered South African telemedicine feasibility, demand, and governance literature (Townsend et al., 2019; Mbunge et al., 2022; Morris et al., 2022; Lagarde et al., 2024). The fifth cluster provided international evidence on telehealth for gender-affirming care to clarify transferable opportunities and risks (Stoehr et al., 2022; Dowshen & Lett, 2022; Grasso et al., 2022; Kahn et al., 2023; Inwards-Breland et al., 2025; Mintz et al., 2022; Sequeira et al., 2021).

The pattern that emerges from these sources is not one of universal effectiveness but of conditional usefulness. Telemedicine appears capable of extending reach when it is linked to a stable clinical pathway, clear governance, and adequate provider competence. Where those foundations are absent, digital contact risks becoming a thin layer of communication over an unchanged pattern of exclusion. This distinction is essential for publication-quality interpretation because it separates technological possibility from service reality.

Table 2. Core sources underpinning the synthesis and their principal analytic contribution.

Source	Setting / design	Primary contribution	Verified DOI
Tomson et al. (2021)	South Africa; guideline	National gender-affirming healthcare guidance; primary-care integration; informed consent	10.4102/sajhivmed.v22i1.1299
Rabe (2022)	South Africa; practice guidance	Operational telehealth guidance for primary care, consent, documentation, and medicolegal issues	10.4102/safp.v64i1.5533
Muller et al. (2023)	South Africa; family medicine article	Clarifies family physician roles in affirming care and decentralised service delivery	10.4102/safp.v65i1.5770
Luvuno et al. (2019a)	KwaZulu-Natal; qualitative study	Documents stigma, poor provider competence, and unmet reproductive-health needs	10.4102/phcfm.v11i1.1933
Luvuno et al. (2019b)	South Africa; scoping review	Shows limited intervention evidence for improving LGBT healthcare access	10.4102/phcfm.v11i1.1367
Zambezi & Viljoen (2024)	South Africa; rights-based analysis	Shows persistent disparities despite legal protections	10.1080/26895269.2023.2273364
Seretlo et al. (2024a)	Gauteng; qualitative study	Demonstrates barriers to sexual and reproductive healthcare among queer people	10.4102/phcfm.v16i1.4726
Seretlo et al. (2024b)	Gauteng; mixed-methods qualitative component	Clarifies holistic queer-specific SRH needs and provider perspectives	10.3390/healthcare12101026
Bothma et al. (2022)	Four SA districts; programme analysis	Illustrates differentiated HIV and gender-affirming service delivery pathways	10.1002/jia2.25987
Bothma et al. (2025)	South Africa; implementation science study	Explores healthcare experiences in transgender-specific differentiated services	10.1002/jia2.26503
Bust et al. (2026)	Eastern and Western Cape; cross-sectional survey	Quantifies unmet need for legal, psychosocial, hormonal, and surgical care	10.7196/SAMJ.2026.v116i1.3523
Lagarde et al. (2024)	South Africa; telehealth demand study	Demonstrates affordability and willingness-to-pay constraints	10.1016/j.socscimed.2024.116570
Morris et al. (2022)	KwaZulu-Natal; survey	Shows telemedicine is used but unevenly formalised in district hospitals	10.3390/ijerph192013029
Stoehr et al. (2022)	Systematic review	Summarises global evidence on telemedicine in gender-affirming care	10.1089/trgh.2020.0136

Access, geography, and continuity of care

A consistent finding across the South African literature is that gender-affirming care is geographically concentrated and organisationally fragmented. Travel to metropolitan or specialist services can require substantial time, money, and emotional labour. In that context, telemedicine has a clear access rationale: it can reduce travel burden for consultations that do not depend on physical examination, support continuity between infrequent in-person visits, and connect patients to scarce expertise without requiring every encounter to occur in a tertiary centre (Tomson et al., 2021; Rabe, 2022; Bust et al., 2026).

The evidence suggests that the access gains are strongest for functions such as psychosocial support, informed-consent discussion, routine follow-up, medication adherence check-ins, symptom review, laboratory-result interpretation, and referral coordination. International studies similarly report that telemedicine can reduce delays and logistical burden for transgender and gender-diverse populations, especially where users live far from specialist providers or fear stigma in local services (Grasso et al., 2022; Sequeira et al., 2021; Kahn et al., 2023). Stoehr et al. (2022) concluded that telemedicine is particularly useful when it supports rather than replaces broader gender-affirming service pathways.

However, continuity benefits are not automatic. Remote encounters can also create new burdens if patients must repeat information across disconnected services, pay for multiple contacts that would previously have been managed in one in-person encounter, or travel anyway because laboratory testing, injection support, physical examination, or prescription fulfilment remain poorly linked to the remote consultation. The literature therefore points to a simple but important conclusion: telemedicine adds the most value when it simplifies the pathway from consultation to next clinical step.

A further implication relates to rurality and peri-urban disadvantage. Although much of the direct South African literature arises from metropolitan or programme-rich sites, the logic of distance and scarcity is especially relevant outside major urban centres. Telemedicine can partially redistribute expertise without relocating specialists, but only if local anchor points exist for laboratory work, medication access, and escalation. In that sense, telemedicine is most powerful where a minimum in-person care infrastructure is already present and can be linked more effectively.

Stigma, privacy, and service acceptability

Telemedicine also has a strong dignity-based rationale because many transgender and queer patients avoid health facilities after experiences of stigma, hostile questioning, or provider ignorance. The South African studies by Luvuno et al. (2019a), Zambezi and Viljoen (2024), and Seretlo et al. (2024a) describe healthcare environments in which care seeking itself may be emotionally costly. In those settings, a remote consultation may reduce exposure to overt discrimination at reception points, waiting areas, and clinical encounters.

Yet privacy and safety operate differently in remote care. Some users may feel safer speaking from home or from a self-chosen private setting; others may have no confidential space, may share devices, or may live in households where disclosure of gender identity carries risk. International youth studies have shown that privacy, family control, and the ability to speak freely can shape whether telemedicine feels liberating or unsafe (Sequeira et al., 2021; Kahn et al., 2023; Inwards-Breland et al., 2025). For South Africa, where housing insecurity and constrained domestic space affect many users, telemedicine design must therefore include patient-selected contact methods, explicit privacy checks at the start of consultations, neutral reminders, and low-threshold switching to alternative modalities.

The synthesis also suggests that acceptability is relational rather than technological. Patients do not experience telemedicine as affirming merely because it is remote. They experience it as affirming when clinicians use respectful names and pronouns, understand gender-diverse health needs, communicate clearly, avoid pathologising assumptions, and provide reliable follow-up. Telemedicine can reduce one form of stigma while reproducing another if the workforce is not competent.

This finding underscores why patient experience should be treated as a core outcome rather than as a secondary satisfaction variable. In gender-affirming care, user experience is closely tied to safety, continuity, and trust. Programmes that ignore this dimension may technically deliver consultations while still failing to deliver care that patients can use consistently.

Workforce preparedness and clinical governance

Provider preparedness emerged as one of the most important determinants of telemedicine quality. South African studies continue to document a shortage of health workers who are adequately trained in transgender and queer health, particularly outside a limited number of experienced sites (Luvuno et al., 2019a; Luvuno et al., 2019b; Zambezi & Viljoen, 2024). Telemedicine does not remove this gap; in some respects, it magnifies it. Remote care requires clinicians to combine gender-affirming competence with skills in digital communication, virtual assessment, documentation, escalation, and care coordination.

The most promising model in the literature is therefore not independent, unsupported telemedicine by isolated clinicians. Rather, it is a layered approach that combines primary care delivery, structured mentorship, specialist consultation, peer navigation, and clear referral routes. The Jabula Uzibone body of work is instructive here because it frames transgender-specific differentiated service delivery as an integrated model in which HIV care, gender-affirming hormone therapy, and culturally competent support are brought into closer alignment (Bothma et al., 2022; Bothma et al., 2025). Telemedicine fits such a model by extending specialist input, maintaining follow-up, and reducing unnecessary travel without collapsing the value of in-person anchor services.

Governance is inseparable from workforce design. Rabe (2022) and Townsend et al. (2019) make clear that telehealth in South Africa must meet the

same professional standards as face-to-face care. For gender-affirming care, that means documenting consent, defining when remote management is inappropriate, setting clear thresholds for urgent in-person review, ensuring secure communication, and building standard operating procedures that recognise the sensitivity of identity, records, and disclosure.

Recent international literature on gender-diverse youth adds weight to this conclusion by showing that telemedicine quality depends not only on platform access but also on clinician communication style, confidence, and responsiveness (Kahn et al., 2023; Inwards-Breland et al., 2025). These lessons are transferable to South Africa because they concern core clinical processes rather than uniquely high-income infrastructures.

Regulatory and ethical environment

The regulatory and ethical environment is not a peripheral concern in this field; it is one of the conditions that determines whether telemedicine can be scaled responsibly. South African telehealth guidance has moved the conversation beyond emergency-pandemic improvisation and now provides clearer expectations around professional standards, documentation, consent, and the equivalence of remote and in-person clinical accountability (Rabe, 2022). Townsend et al. (2019) similarly showed that telemedicine in South Africa requires explicit ethical guidance because ordinary assumptions about confidentiality, communication, and responsibility become more complex when care occurs across distance.

For gender-affirming care, these governance issues are amplified. Identity-sensitive information may carry social risk if disclosed inadvertently. Communication with patients may need to avoid affirming terms in reminders or messages where device sharing is common. Records may need to preserve both clinically necessary information and affirmed identity in ways that reduce harm and misgendering. The evidence, therefore, suggests that a gender-affirming telemedicine service cannot simply borrow generic telehealth procedures without modification.

There is also an important relationship between governance and legitimacy. In settings where clinicians remain uncertain about what is permissible, telemedicine may be underused even when it could benefit patients. Conversely, ambiguous governance can encourage informal, under-documented, or inconsistent practice. The most credible approach is a middle path: telemedicine embedded within clear protocols, explicit thresholds for in-person review, and routine quality audit. This is particularly important in hormone-related care, mental-health support, and the management of urgent symptoms that may initially be reported remotely.

The results of this review therefore reinforce a governance principle: telemedicine should be standardised enough to protect patients and clinicians, but flexible enough to preserve patient choice over modality, contact timing, and privacy arrangements. That balance is more likely to support trustworthy implementation than rigid, one-size-fits-all digital protocols.

Digital feasibility and affordability

Digital feasibility and affordability were among the strongest limiting themes in the review. South African telehealth and digital health studies show that telemedicine adoption is shaped by connectivity, electricity reliability, device access, clinician workflow integration, and the continued dominance of informal or ad hoc communication practices in some settings (Mbunge et al., 2022; Morris et al., 2022). These constraints matter directly for gender-affirming care because populations facing unemployment, poverty, or unstable housing are less able to absorb the costs of data-heavy or unreliable service models.

Lagarde et al. (2024) provide particularly important evidence by demonstrating that the willingness to pay for telehealth among uninsured South African adults is below prevailing private-sector price points. This finding undercut simplistic claims that digital care is inherently access-expanding. A service that saves the provider time but transfers costs to the patient through data, airtime, repeat contacts, or private-platform charges may deepen inequity. The review, therefore, indicates that telephone-first or low-data hybrid models are likely to be more equitable than video-first approaches that assume bandwidth, privacy, and device stability.

The implication is that telemedicine should be designed around the realities of South African health systems rather than idealised digital health models. Programmes should specify which modality is used for which function, what back-up plan exists when connectivity fails, how laboratory and pharmacy steps are completed, and whether patient costs are minimised. These design details are not peripheral; they determine who can actually use the service.

A secondary but important digital issue concerns records and interoperability. Gender-affirming care often depends on continuity across providers,

laboratories, pharmacies, HIV services, and mental-health supports. If telemedicine encounters are poorly documented or not connected to downstream systems, remote care may inadvertently increase fragmentation rather than reduce it. Documentation practices that respect affirmed identity while preserving clinical continuity are therefore central to the quality of implementation.

Integrated care pathways and differentiated service models

One of the clearest findings across the review is that telemedicine is most defensible when embedded in integrated and differentiated care pathways. South African evidence from transgender HIV services indicates that care models work better when users can access affirming staff, hormone-related support, prevention and treatment services, and practical navigation assistance in one coordinated pathway rather than across fragmented service points (Bothma et al., 2022; Bothma et al., 2025). The 2026 cross-sectional survey by Bust et al. similarly highlights how large the gap remains between expressed need for psychosocial care, hormone therapy, and surgery and actual access to those services.

This matters because gender-affirming care is longitudinal and multi-component. Even when a remote consultation is clinically appropriate, most patients will still require some combination of laboratory testing, prescription fulfilment, emergency review, referral for speech or mental-health services, or surgical consultation. Telemedicine is therefore best understood as one operational layer within a broader system of care. Its role is to reduce friction across the pathway, not to virtualise every element of care.

The practical consequences are reflected in the care-continuum mapping summarised in Table 4. High suitability was observed for psychosocial support, laboratory-result review, adherence counselling, routine education, and coordination functions. Moderate suitability was observed for hormone-related follow-up, some sexual and reproductive health interactions, and selected pre-operative or post-operative contacts, provided that escalation arrangements are explicit. Low suitability was observed for situations requiring physical examination, emergency assessment, hands-on procedures, or initial evaluation that cannot safely proceed without in-person clinical appraisal.

The integrated-care finding also helps explain why programme-level implementation evidence may be more useful than isolated reports of patient satisfaction with telemedicine. What matters is not only whether one visit was acceptable, but whether telemedicine improved the continuity, coordination, and dignity of the broader care pathway.

Population-specific considerations and pathway continuity

Population-specific considerations also emerged from the synthesis. Adolescents and younger adults may value telemedicine because it reduces travel dependence and can be more compatible with school or family schedules; however, they may also have less control over privacy, device access, or parental monitoring. The international youth literature shows that these factors materially affect acceptability and candour during remote encounters (Sequeira et al., 2021; Kahn et al., 2023; Inwards-Breland et al., 2025). In South Africa, similar dynamics are likely to arise in family-controlled households, hostels, shared accommodation, and other settings where confidential communication is difficult.

The interaction between gender-affirming care and HIV service delivery is another important population-level issue. South African programme evidence suggests that integrated, transgender-sensitive HIV services can create an operational platform through which telemedicine may support adherence, prevention, effective use, counselling, and follow-up while simultaneously reinforcing a broader affirming care pathway (Bothma et al., 2022; Bothma et al., 2025). This integration is especially relevant because many users do not experience their healthcare needs in disease-specific silos.

A final population issue concerns people with unstable living conditions or financial insecurity. For these groups, telemedicine may reduce transport costs and clinic exposure while simultaneously creating dependence on airtime, data, and device continuity. Programmes that do not account for these trade-offs may incorrectly assume that remote care is the cheaper option from the patient perspective. The evidence instead suggests that cost burden should be measured, not assumed.

Table 3. Synthesis of the main opportunity and constraint domains identified in the review.

Domain	What the evidence suggests	Operational implication
Access and geography	Reduces travel burden, extends specialist reach, supports continuity between scarce in-person visits	Works best when linked to laboratory, pharmacy, and referral pathways rather than operating as a stand-alone consultation

Stigma and acceptability	Can reduce exposure to hostile clinic environments and improve user control over contact timing	Requires privacy checks, affirming communication, and patient-chosen modalities because home environments may also be unsafe
Workforce and competence	Can support decentralisation when primary-care clinicians have mentoring and specialist back-up	Should not precede workforce preparation; poorly trained remote care can magnify mistrust and clinical risk
Digital feasibility	Telephone-first and low-data approaches may broaden usability in resource-constrained contexts	Video-first or app-heavy approaches risk excluding users with unstable connectivity or shared devices
Affordability	Potential to lower transport and time costs	Private market pricing may still block access; public-interest and subsidised models are more plausible
Governance	Telehealth can be ethically defensible within existing professional standards	Requires clear SOPs on consent, documentation, escalation, confidentiality, and identity-sensitive records
Integrated care	Particularly useful for follow-up, counselling, adherence support, and coordination	Should be embedded in hybrid differentiated service-delivery pathways

Telemedicine suitability across the gender-affirming care continuum

Together, these results support a pragmatic implementation position. Telemedicine has a real role in South African gender-affirming care, but the relevant unit of analysis is not the virtual consultation alone. The relevant unit is the hybrid pathway that connects remote contact to laboratory services, pharmacy access, peer support, primary care, specialist expertise, and patient-controlled privacy safeguards. Figure 2 presents the conceptual framework derived from the synthesis, while Table 5 translates that framework into implementation and research priorities.

The function-specific approach also enhances publication-readiness by converting a broad topic into analytically precise claims. Rather than asserting that telemedicine is simply beneficial or harmful, the review identifies which aspects of care are suitable for remote delivery, the conditions required for safe use, and where in-person care remains essential. This level of specificity is more likely to satisfy reviewers in public health, digital health, and transgender health journals.

Table 4. Function-specific suitability of telemedicine across the gender-affirming care continuum.

Care component	Remote suitability	Conditions for safe use	When in-person care is essential
Psychosocial assessment and counselling	High	Private setting, safeguarding checks, and referral pathway for crisis escalation	Acute suicidality, immediate safety risk, or inability to ensure confidentiality
Informed-consent discussion and education	High	Clear information exchange and opportunity for follow-up questions	Complex decision-making that cannot proceed safely without examination
Hormone therapy routine follow-up	Moderate to high	Stable patient, laboratory access, documented monitoring plan, and escalation rules	Complex initiation, significant adverse effects, or uncertain clinical findings
Laboratory-result review	High	Reliable contact method and timely documentation	Critical abnormalities requiring urgent physical review
HIV and sexual-health adherence support	High	Linkage to testing, medication supply, and symptom triage	Symptoms requiring specimen collection or examination
Pre-operative/post-operative counselling	Moderate	Good image quality where relevant and low threshold for in-person review	Wound complications, infection, uncontrolled pain, or urgent surgical concerns
Care coordination and peer navigation	High	Named referral points and documented communication permissions	Not usually in-person essential, but should complement other service steps

Figure 2. Conceptual framework for telemedicine-enabled gender-affirming care as a hybrid, equity-sensitive service layer in South Africa.

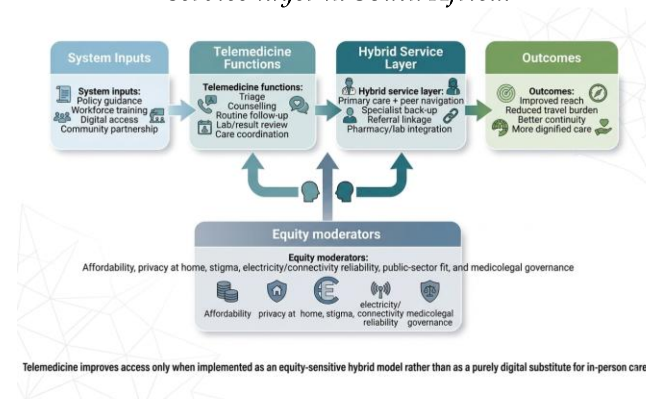


Table 5. Priority implementation and research actions derived from the review.

Priority area	Recommended action	Why it matters
Service model	Adopt hybrid, function-specific pathways rather than full virtual substitution	Improves fit with South African infrastructure and clinical realities
Financing	Use public-sector, donor-supported, or other subsidised models that minimise patient costs	Reduces exclusion associated with private telehealth pricing
Workforce	Train primary-care clinicians in gender-affirming care and remote practice; build mentorship chains	Supports safe decentralisation and reduces specialist bottlenecks
Governance	Create SOPs covering privacy, records, consent, modality failure, and escalation	Strengthens medico-legal defensibility and quality assurance
Digital design	Prefer low-data and telephone-compatible systems with contingency options	Improves reach in settings of unequal connectivity
Community partnership	Co-design communication, follow-up, and feedback mechanisms with transgender and gender-diverse communities	Improves acceptability, safety, and early detection of implementation failures
Evaluation	Measure reach, retention, patient experience, referral completion, safety, and patient cost	Builds the evidence base required for scale-up and journal-quality reporting

4. DISCUSSION

Principal interpretation of the findings

This review makes a central argument: telemedicine is best understood as an access multiplier whose value depends on system design. It is neither a universal solution nor a marginal convenience. In South Africa, where gender-affirming services remain unevenly distributed and many users encounter stigma in routine care, telemedicine can substantially improve selected aspects of access. However, its benefits are conditional. They depend on clinical competence, digital feasibility, affordability, confidentiality, and the integrity of downstream referral pathways.

This interpretation is important because telemedicine is often discussed in overly general terms. In the absence of an equity lens, the literature can make remote care appear self-evidently progressive. The findings here suggest otherwise. A video consultation that requires costly data, occurs in a non-private household, and leads to no reliable laboratory or pharmacy linkage is not necessarily more accessible than an in-person visit. By contrast, a low-cost hybrid pathway that allows routine counselling, result review, and adherence support to occur remotely while preserving access to local testing and referral can be meaningfully access-enhancing.

The South African literature also shows that implementation cannot be separated from the politics of recognition. Gender-affirming care is not merely a technical set of interventions. It is a care relationship shaped by whether clinicians recognise patients' identities, use respectful language, understand transition-related health needs, and avoid treating transgender experience as pathology. Telemedicine inherits these relational requirements. It does not neutralise them.

This is one reason the access-with-dignity lens is analytically useful. It guards against evaluating telemedicine only on throughput or convenience. For marginalised populations, timely access without dignity is not high-quality access; conversely, respectful interaction without a workable pathway to laboratories, prescriptions, or specialist referral is not sufficient either. The review therefore argues for a dual standard of practical access and relational safety.

Implications for health systems, policy, and financing

For health-system policy, the implications are clear. First, telemedicine for gender-affirwell-suitedming care should be hybrid by default. Services should distinguish between functions that are well suited to remote delivery and those that require face-to-face assessment. Second, telemedicine should be embedded in public-sector, donor-supported, or otherwise subsidised pathways rather than relying primarily on consumer-paid private platforms. The affordability evidence from South Africa is too strong to ignore (Lagarde et al., 2024). Third, implementation should be linked to training, mentorship, and referral mapping. Telemedicine without workforce preparation is more likely to scale poor care than good care.

Fourth, governance must be explicit. Standard operating procedures should address modality choice, identity confirmation, confidentiality, documentation, emergency escalation, prescription practices, laboratory follow-up, and data security. Rabe (2022) and Townsend et al. (2019) provide a strong foundation for such governance, but service-specific operationalisation remains necessary. Finally, telemedicine policy should not be restricted to narrow teleconsultation rules; it should be connected to broader agendas in primary care strengthening, HIV service integration, digital inclusion, and queer-affirming service delivery.

The review also suggests that telemedicine policy should be evaluated through a public-interest lens. If the dominant service model remains a premium, convenience-oriented private teleconsultation product, it is unlikely to address the populations most affected by service scarcity and stigma. By contrast, when remote care is linked to decentralised primary care, HIV programmes, and community partnerships, it is more likely to function as an equity tool.

Implications for clinical practice and programme design

For clinical practice, the review suggests several concrete priorities. Clinicians should begin each remote encounter by confirming preferred name, pronouns, and privacy conditions. They should explicitly establish whether the patient is able to speak freely and whether urgent safety concerns exist. Telemedicine visits should have a defined purpose, and clinicians should communicate clearly what can be managed remotely and what will still require in-person follow-up. Programmes should avoid using telemedicine as an unfunded administrative add-on that creates more steps for patients.

Particular caution is warranted in hormone-related care. The review does not support a blanket view that all gender-affirming hormone therapy can be initiated and monitored remotely in all circumstances. Rather, the evidence supports a differentiated model in which education, informed-consent dialogue, routine follow-up, review of stable results, adherence support, and counselling are often appropriate for telemedicine, while complex initiation decisions, uncertain presentations, significant adverse effects, and circumstances requiring examination or urgent intervention require in-person assessment. This function-specific framing is more clinically defensible than either blanket enthusiasm or blanket rejection.

The review also highlights the value of peer and community linkages. Telemedicine programmes will be more acceptable and safer if they are codesigned with transgender and gender-diverse communities, include community-informed communication protocols, and create feedback loops through which service users can identify harms that managers may overlook. This is especially important where issues of privacy, language, gender recognition, and fear of disclosure are central to service acceptability.

In practical terms, clinicians and programme managers should treat telemedicine workflows as part of the clinical pathway rather than as a separate administrative activity. Appointment scheduling, reminder systems, consent documentation, referral notes, laboratory ordering, and escalation pathways should be standardised and rehearsed. Quality assurance should include patient-reported outcomes, missed-visit review, and documentation audit rather than relying solely on provider impressions of feasibility.

Equity considerations, strengths, and limitations

The equity implications deserve explicit emphasis. Transgender and queer populations are not internally homogeneous. Adolescents, users living with family, migrants, people in rural or peri-urban areas, uninsured users, and people experiencing unstable housing may benefit from telemedicine in some respects while being excluded in others. The same logic applies to language, disability, and digital literacy. Publication-quality analysis must therefore move beyond the question of whether telemedicine works and instead ask for whom it works, under what cost conditions, and with what safeguards.

This review has several strengths. It draws together South African gender-affirming care guidance, healthcare-access studies, telehealth governance literature, implementation evidence, and targeted international transgender telehealth studies into one integrated argument. It also maintains methodological transparency by framing the paper as a structured critical review rather than overstating it as a fully reproducible systematic review. At the same time, limitations remain. Direct South African studies specifically evaluating telemedicine for gender-affirming care remain sparse, so some arguments rely on adjacent evidence streams. The field would benefit from prospective evaluations of hybrid care models with clearly defined outcomes on reach, retention, patient experience, safety, and cost.

A further limitation is that not all included sources were designed to directly measure telemedicine outcomes. Some contributed contextual insight into service scarcity, stigma, governance, or differentiated care models rather than telemedicine-specific endpoints. This does not weaken their value, but it does mean that the review's conclusions are most robust when interpreted as implementation guidance rather than as a narrow effectiveness statement.

Future research agenda

Future research should therefore prioritise implementation rather than abstraction. The next generation of South African studies should test function-specific telemedicine pathways, compare telephone-first and video-first models, examine

patient costs and digital burden, document privacy and stigma experiences during remote encounters, and measure how telemedicine influences completion of downstream laboratory, pharmacy, and referral steps. Mixed-methods and implementation-science approaches are especially well suited to this agenda because the core questions concern feasibility, acceptability, equity, and system fit rather than single clinical endpoints alone.

In addition, future research should report transgender and gender-diverse categories with care, describe settings and insurance status clearly, document training and governance arrangements, and identify the precise service components that were remote, hybrid, or in-person. Without such reporting, the field risks producing generic claims that are difficult for clinicians and policymakers to act on.

There is also a need for comparative evidence across provinces and service models. The strongest current South African evidence arises from specific programmes and provinces. Nationally scalable policy will require understanding how telemedicine performs in districts with weaker infrastructure, fewer experienced providers, and different patterns of poverty, mobility, and HIV service integration.

Implications for reporting and publication-quality evidence generation

From a publication perspective, the implications are also noteworthy. Reviewers in Q1 journals are unlikely to be persuaded by manuscripts that simply repeat that telemedicine has promise. They typically expect conceptual precision, transparency about the limits of the evidence base, and a clear explanation of why the argument matters to health systems, not only to technology adoption. The current synthesis is stronger precisely because it makes narrower but more defensible claims: telemedicine can support gender-affirming care in South Africa when implemented as a hybrid, equity-sensitive, and governed service model.

This positioning is important because it aligns the manuscript with contemporary priorities in implementation science, digital health, and health-equity scholarship. The paper contributes not by claiming definitive effectiveness in all settings, but by specifying mechanisms, constraints, and design conditions that can inform future evaluations and policy decisions. That form of contribution is often more valuable in emerging fields than premature claims of settled evidence.

Table 6. Recommended reporting items for future South African evaluations of telemedicine-enabled gender-affirming care.

Reporting domain	Minimum item to report	Why it matters
Intervention clarity	Specify which parts of care were remote, hybrid, or exclusively in-person	Prevents vague claims about telemedicine effectiveness
Setting description	Report province, district, urbanicity, service platform, and public/private status	Improves transferability and equity interpretation
Population detail	Describe age bands, gender-diversity categories, insurance status, and housing or digital-access constraints where feasible	Shows who is and is not being reached
Governance detail	Report consent, privacy checks, documentation procedures, and escalation rules	Allows assessment of ethical adequacy
Workforce model	Describe cadre mix, training, mentorship, and specialist back-up	Links outcomes to implementation supports
Patient cost and digital burden	Measure data, airtime, travel savings, device challenges, and connectivity failure	Essential for deciding whether remote care is truly access enhancing
Pathway outcomes	Track referral completion, lab completion, retention, adverse events, and patient experience	Moves evaluation beyond attendance alone

5. CONCLUSION

Telemedicine holds meaningful promise for strengthening gender-affirming care in South Africa, but its value lies in how it is designed, governed, and implemented rather than in the technology itself. The evidence synthesised in this manuscript indicates that telemedicine can improve selected aspects of care delivery, particularly where it supports counselling, psychosocial care, continuity of treatment, routine follow-up consultations, medication adherence support, laboratory result review, and multidisciplinary care coordination. In these domains, virtual and hybrid care pathways can reduce travel burden, lower indirect costs, improve continuity for geographically dispersed users, and create new entry points into affirming services for individuals who might otherwise delay or avoid care because of stigma, distance, or provider scarcity. However, the review also demonstrates that telemedicine is not inherently equitable and should not be presented as a universal solution to long-standing structural barriers in South African healthcare.

Its benefits depend on several interdependent system factors: affordable connectivity, access to

private and safe consultation spaces, digital literacy, clinician competence in gender-affirming care, legal and professional compliance, and reliable referral pathways for in-person examination, laboratory monitoring, prescription management, and emergency escalation. Where these foundations are weak, telemedicine may reproduce or even deepen exclusion, particularly for service users facing poverty, unstable housing, hostile family environments, limited device access, or fear of disclosure. The most defensible policy and service-delivery position is therefore not full virtualisation, but a carefully governed hybrid model that integrates telemedicine into existing primary care, HIV and sexual-health platforms, pharmacy and laboratory systems, mental health services, specialist referral networks, and community-based navigation structures.

This manuscript's central contribution is to move the discussion beyond generalized technological optimism and to frame telemedicine as a service strategy that must be judged according to equity, dignity, safety, continuity, and contextual appropriateness. For South Africa, the crucial question is not whether telemedicine should replace face-to-face gender-affirming care, but how it can be used selectively and responsibly to widen access while preserving clinical quality and relational trust. A Q1-level scholarly and policy implication emerging from this review is that future implementation efforts must be accompanied by clearer standards, workforce development, community-informed design, and context-sensitive evaluation. Telemedicine can strengthen gender-affirming care in South Africa, but only when it is embedded in an affirming, accountable, and system-linked model of care rather than treated as an isolated digital intervention.

6. DECLARATION

Conflict of interest

The authors declare that they have no known competing financial interests or personal, professional, or institutional relationships that could have influenced the work reported in this paper.

Funding

This research received no external funding. No funding body had any role in the conceptualisation, design, interpretation, writing, or decision to submit the manuscript for publication.

Data availability

No new data were created or analysed in this study. The manuscript is based on published and publicly accessible sources, all of which are cited in the reference list.

Ethics approval

Ethical approval was not required for this study because it involved the synthesis of published and publicly available literature and did not include human participants, identifiable personal data, or animal subjects.

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