



Grassroots Governance and Telemedicine in West Bengal: A Policy Analysis of the Swasthya Ingit Initiative

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Abstract

The Indian healthcare system, particularly in rural and remote regions, continues to face persistent inequities in accessibility, affordability, and accountability despite decades of policy interventions. Telemedicine has emerged as a key strategy to address these disparities, supported by the Indian Space Research Organisation (ISRO), to connect super-speciality hospitals with underserved regions. In this context, the Government of West Bengal launched the Swasthya Ingit initiative, a state-wide telemedicine program aimed at ensuring equitable, high-quality healthcare delivery to marginalised populations through upgraded Sub-Health Centres (SHCs) and Suswasthya Kendras, many of which have been converted into Health and Wellness Centres (HWCS). This study critically examines the design, implementation, and impact of Swasthya Ingit through a qualitative documentary analysis of government reports, policy documents, media coverage, and secondary literature. Findings reveal that the initiative has expanded access to specialist consultations, especially benefiting women and middle-aged adults in rural areas by leveraging digital infrastructure and community-based health delivery systems. However, implementation challenges persist, including uneven geographical coverage, infrastructural deficits, limited digital literacy, and workforce shortages. The study argues that Telemedicine, when integrated with grassroots governance principles and adequate institutional support, holds significant promise for decentralising healthcare and enhancing transparency and accountability within the public health system.

Keywords: Telemedicine, Swasthya Ingit, Digital Health, Grassroots Governance, Health and Wellness Centres (HWCs), Decentralised Healthcare.

1. Introduction

India, as a developing country, continues to face persistent disparities in healthcare access and distribution. Nearly 65–70% of the population resides in rural areas, yet around 80% of doctors are concentrated in urban centers, serving only about one-third of the population (Koul, 2023). This uneven distribution creates significant barriers for rural residents in accessing essential health services. Despite successive policy commitments, public investment in health remains critically low; India spends only 1.9% of its GDP on healthcare (Economic Survey, 2023–24). This chronic underfunding has resulted in one of the highest levels of private expenditure globally, with out-of-pocket spending accounting for 62.6% of total health expenditure. The urban–rural divide is also apparent in the quality and availability of infrastructure. According to NITI Aayog, only 11% of sub-centers, 13% of primary health centers (PHCs), and 16% of community health centers (CHCs) meet the Indian Public Health Standards. Furthermore, 65% of hospital beds are located in areas serving only half the population. Rural areas, including those in West Bengal, face chronic shortages of trained personnel, inadequate infrastructure, and limited access to specialised care. As a result, impoverished rural households often face high out-of-pocket expenses not only for treatment but also for travel and accommodation in urban centres to access specialised care (Sharma, 2000).

Despite numerous policy efforts to enhance rural health outcomes, issues related to accessibility, affordability, and accountability remain. These include longstanding shortages of trained healthcare personnel, poor infrastructure, and limited access to services in remote areas. To address these gaps, telemedicine has emerged as a promising solution to expand healthcare delivery to underserved populations. The term telemedicine, derived from its literal meaning of "healing at a distance," is often used as an umbrella term that encompasses healthcare delivery along with activities like education, research, health surveillance, and public health promotion. Initiated in 2001 through ISRO's pilot project linking Apollo Hospital in Chennai with a rural facility in Andhra Pradesh, telemedicine has since seen significant growth. Government programs such as the Integrated Disease Surveillance Project (IDSP), the National Rural Telemedicine Network, and the National Medical College Network, along with the development of national practice guidelines and international collaborations (e.g., Pan-African eNetwork, SAARC Telemedicine Network), have laid a strong institutional foundation. Today, telemedicine applications extend to oncology, surgery, diagnostic services, and managing mass gatherings such as the Kumbh Mela. Private sector entities, including Apollo, Narayana Hrudayalaya, and Aravind Eye Care, have also played a pivotal role, often partnering with public institutions and ISRO. Currently, ISRO's network connects 45 rural hospitals with 15 super-speciality centres, covering geographically challenging regions such as Jammu and Kashmir, the Andaman and Nicobar Islands, and Lakshadweep (Chellaiyan et al., 2019). This initiative aimed to enable real-time consultations between rural patients and urban-based medical specialists. The COVID-19 pandemic greatly accelerated the adoption of telemedicine due to lockdowns and social distancing measures, prompting the Government of India to formalise telemedicine practices through regulatory changes. For example, the eSanjeevani platform, first introduced in Andhra Pradesh in 2019, has become a leading digital health platform under the National Telemedicine Service (Malhotra et al., 2020). Despite progress in achieving the doctor-to-population ratio of 1:1,000 by 2018, according to the World Health Organisation, a large unmet need for essential and specialised

healthcare services remains in rural and remote areas. These regions continue to face high rates of maternal and child mortality, infectious diseases, non-communicable diseases (NCDs), and lifestyle-related illnesses.

In West Bengal, the state government has launched several initiatives to address healthcare disparities, especially for the underprivileged. One such effort is the "Swasthya Ingit" program, introduced in August 2021. It is an IT-based, audio-visual telemedicine program aimed at bringing healthcare services closer to rural residents. The initiative aims to establish telemedicine facilities at all Susasthya Kendras (SKs) across the state, transforming them into decentralised e-Clinics. This model allows villagers to consult with specialist doctors without travelling long distances, thereby improving access, encouraging early diagnosis, ensuring timely medical care, and reducing out-of-pocket expenses. The Swasthya Ingit initiative was especially crucial during the COVID-19 pandemic, as it played a key role in enabling surveillance, screening, isolation, and timely treatment of infected individuals. Beyond pandemic response, the program supports long-term goals of providing quality, accessible, and inclusive healthcare in rural areas of West Bengal (Swasthaingit - eSanjeevani, n.d.). However, despite these advances, several barriers remain. Rural populations in West Bengal still face challenges in accessing specialized care due to geographical isolation, limited transportation options, and infrastructural gaps. While the literature acknowledges the growing role of Telemedicine in rural healthcare, there is still a lack of focused studies on the implementation and impact of state-led telemedicine programs, especially within grassroots health governance. This study aims to fill this research gap by offering a detailed analysis of the Swasthya Ingit initiative. It seeks to evaluate the program's effectiveness, identify implementation challenges, and examine its broader implications for rural healthcare delivery within decentralised governance.

2. Literature Review on Digital Health and Telemedicine in India

Jabarethina and John (2023) offer a critical review of the changing landscape of Telemedicine in India in their paper "Emergent Telemedicine Practice in India: Challenge and Response." The authors highlight the transformative role of technological advancements in encouraging telemedicine adoption, especially during the COVID-19 pandemic, which greatly sped up the use of digital health solutions among healthcare providers and patients. Despite this progress, the study points out major barriers to widespread telemedicine adoption, including infrastructural limitations, data privacy concerns, and low digital literacy among users. To address these challenges, the authors suggest a multi-stakeholder approach that considers the perspectives of policymakers, healthcare professionals, technologists, and patients. They stress that effective Telemedicine requires coordinated efforts across policy, practice, technology, and user engagement. The paper emphasises the importance of continuous monitoring and system improvements to close existing gaps and provide equitable and efficient healthcare services.

Peri et al. (2022) conducted a systematic review to evaluate the effectiveness of telemedicine interventions in improving reproductive and neonatal health outcomes in rural and low-income areas of India. The review thoroughly analysed 3,098 records from four databases, ultimately including eight studies that met the selection criteria. These studies were categorised into direct telemedicine interventions with patients and indirect interventions facilitated by frontline healthcare workers. This classification allowed for a detailed

assessment of Telemedicine's impact across different implementation models. Results showed that 22.4% of health and knowledge outcomes from direct interventions demonstrated statistically significant improvements, compared to 38.0% in indirect interventions. The higher effectiveness of indirect approaches suggests that Telemedicine may be more impactful when mediated by trained healthcare providers, who can enhance communication and knowledge sharing in underserved settings. Notably, the review highlights Telemedicine's educational benefits, especially in improving health literacy within resource-limited communities. Despite these encouraging findings, the review recognises key challenges, including technological barriers and insufficient training for healthcare personnel. These issues could reduce the effectiveness of telemedicine efforts if not properly addressed.

2.1. Telemedicine in Rural Areas Bagchi (2006) highlights the transformative potential of telemedicine in closing healthcare gaps in rural India. The author emphasizes ISRO's Healthsat program, which connects rural hospitals with urban super-speciality centers. This initiative has improved access to specialist care, reduced out-of-pocket expenses, and increased the speed of medical services for millions in remote regions. Despite these advantages, telemedicine faces challenges such as limited internet bandwidth, lack of interoperability standards, technophobia, cultural resistance, concerns about job displacement, and high startup costs. Bagchi stresses that overcoming these barriers through strategic investments in digital infrastructure, training healthcare providers, and raising public awareness is essential for the sustainable integration of telemedicine into rural healthcare systems.

Dasgupta and Deb (2008) analyze how Telemedicine strengthens public health systems in rural and underserved areas of India. They identify two main technological methods: store-and-forward systems, used for non-emergency consultations like teleradiology and teledermatology, and interactive audiovisual telecommunication (IATV), which allows real-time specialist consultations in fields such as psychiatry and cardiology. The Karnataka Telemedicine Project is showcased as a successful example, having supported over 10,000 multi-specialty consultations for rural communities, proving the scalability of telemedicine infrastructure. The study also highlights tools like Geographic Information Systems (GIS) used in epidemiological surveillance and managing health resources. However, it points out ongoing scepticism among healthcare workers, caused by limited awareness, lack of training, and concerns about diagnostic accuracy. The authors stress the importance of combining human expertise with technological tools to ensure healthcare is both practical and safe.

Maroju et al. (2023) present a narrative review on the changing role of telemedicine and digital technologies in transforming public health delivery in India. The study highlights the COVID-19 pandemic as a turning point that sped up the adoption of telemedicine, especially in rural and underserved areas with limited access to in-person care. Telemedicine is seen as a vital tool for maintaining healthcare services and strengthening primary health infrastructure. However, challenges such as the digital divide, poor connectivity, data privacy issues, and inconsistent care quality continue to hinder its fair implementation. The authors advocate for strategic investments and institutional support through initiatives like the National Medical College Network and the National Rural Telemedicine Network to expand and integrate telehealth services. They conclude that

while telemedicine has great potential to improve public health systems, its success depends on fair digital access, supportive policies, and ongoing capacity building.

Agarwal et al. (2020) provide a critical analysis of Telemedicine as an emerging healthcare approach in India, with a focus on its rapid adoption during the COVID-19 pandemic. The study highlights the issuance of the Telemedicine Practice Guidelines by the Medical Council of India in March 2020 as an important regulatory milestone that legitimized virtual consultations and brought Telemedicine into mainstream clinical practice. The authors point out longstanding disparities in healthcare access, mainly between urban and rural areas, worsened by a low doctor-population ratio of 0.62:1000. Telemedicine is seen as a strategic way to bridge these gaps by improving access, minimising infection risks, and managing chronic diseases more effectively. Despite these advantages, the study also notes ongoing challenges, such as medico-legal uncertainties, data privacy concerns, and limited digital literacy among both providers and patients. The authors stress the importance of creating a strong regulatory framework, investing in digital infrastructure, and implementing capacity-building programs to ensure that Telemedicine can be sustainably integrated into India's healthcare system and strengthen its resilience against future public health emergencies.

Chandrakar (2023) explores the transformative potential of digital tools in rural healthcare systems, especially in the aftermath of the COVID-19 pandemic. The paper emphasizes telemedicine, mobile health (mHealth) apps, electronic health records (EHRs), and remote patient monitoring as crucial in closing systemic gaps in rural healthcare. Through case studies, such as those from the Apollo Telemedicine Networking Foundation, it demonstrates how these technologies can be tailored for rural Indian settings. However, the review also highlights barriers to adoption, particularly limitations in digital infrastructure and the digital divide. Initiatives like Bharat Net are recognized as essential for expanding connectivity and ensuring the long-term success of digital healthcare.

2.2. The Swasthya Ingit Initiative: Policy and Practice

The Swasthya Ingit initiative, launched by the Government of West Bengal's Health and Family Welfare Department (2023), exemplifies an integrated telemedicine model aimed at enhancing tuberculosis (TB) management across both rural and urban regions. Strategically aligned with India's national objective of TB elimination by 2025, the initiative establishes 'Hub-Tuberculosis' centres within public health facilities to deliver remote consultations supported by a coordinated specialist team and district-level oversight by Deputy Chief Medical Officers of Health. A key feature of the programme is its robust documentation system, ensuring continuity of care through accurate tracking of patient diagnoses, treatment histories, and follow-up visits. Notably, the initiative underscores grassroots community engagement through Panchayati Raj Institutions (PRIS), which play a pivotal role in promoting the TB Mukht Panchayat campaign and mobilising community awareness and service uptake. Its data-driven monitoring framework, involving regular performance assessments, enhances accountability and facilitates iterative service improvements. Overall, Swasthya Ingit demonstrates how telemedicine, when integrated into a decentralised and participatory governance model, can effectively expand access to TB care and serve as a scalable approach for incorporating digital health solutions into public health systems.

Mondal et al. (2023), in their study titled "Utilisation and challenges of 'Swasthya Ingit' services faced in a district of West Bengal, India: a mixed methods approach," provide a comprehensive assessment of the Swasthya Ingit telemedicine initiative implemented in South 24 Parganas, West Bengal. Using a mixed-methods approach, the study evaluates usage patterns and identifies key challenges in delivering teleconsultation services under the program. The findings highlight that a significant portion of consultations relate to non-communicable diseases (NCDs), indicating the platform's increasing relevance in managing chronic illness burdens in rural and underserved areas. The study also reveals a demographic trend showing that adult female patients constitute the majority of service users, aligning with broader rural healthcare utilization patterns in India. Despite its growing adoption, the initiative faces several systemic challenges, including inadequate internet connectivity, limited technical infrastructure, and insufficient digital training among healthcare providers. The authors recommend strengthening the program through regular capacity-building efforts, improved infrastructure, and increased community awareness to optimize service delivery. Additionally, the integration of lifestyle counseling with pharmacological treatment within teleconsultations is emphasized as a key element of a comprehensive NCD management strategy. The study offers practical and policy-relevant insights into the scalability and sustainability of telemedicine initiatives like Swasthya Ingit, especially within rural public health systems in India.

2.3. Community participation in grassroots governance

The digitisation of Accredited Social Health Activists' (ASHAs) work marks an important step in modernising grassroots healthcare delivery in India. Anand Dixit's study, "Digitalisation of ASHA Work: Challenges and Way Forward," highlights how digital tools such as mobile apps and online reporting systems can significantly improve the efficiency, accuracy, and responsiveness of healthcare services (WHO, 2022). Digitisation is especially important for initiatives like the Community-Based Assessment Checklist (CBAC) for non-communicable disease (NCD) screening among adults aged 30 and above. Electronic data collection enhances reporting speed and data reliability, which are vital for large-scale public health efforts. However, challenges like limited digital literacy among ASHAs, concerns over data security, and insufficient incentive structures threaten the successful implementation of these technologies. The author emphasises that successful digitisation requires targeted interventions, including comprehensive digital training, strong data management protocols, and motivational incentives. Overcoming these barriers is essential to fully harness digital tools for strengthening healthcare services at the community level.

The study by Srinidhi et al. (2021) examines the implementation and impact of ASHA Kirana, a digital health intervention featuring the Maternal Clinical Assessment Tool (M-CAT), designed to improve the clinical skills of Accredited Social Health Activists (ASHAs) in rural Karnataka, India. The paper describes how M-CAT enabled ASHAs to gather individual-level maternal health data during antepartum and postpartum visits, helping medical officers identify risks more efficiently. Unlike many mHealth initiatives that focus on system-level tracking and education, this intervention is centred on collecting clinical data at the individual level, promoting more responsive maternal care. The study emphasises the empowerment of ASHAs through training and data interpretation, transforming their role from passive informants to active participants in

healthcare delivery. Although M-CAT was paper-based and had limited real-time diagnostic utility, it was well-received and highlighted the importance of providing front-line workers with knowledge and tools to strengthen community health responses. The paper concludes that scalable, digitally supported tools can help close clinical gaps and boost the agency of ASHAs in rural health systems.

While existing literature discusses the role of telemedicine in rural healthcare, there is limited research on the implementation and impact of state-led telemedicine initiatives in India, especially within grassroots governance. This study aims to address this gap by providing an in-depth analysis of the Swasthya Ingit telemedicine initiative, evaluating its effectiveness, challenges, and implications for rural healthcare delivery.

3. Objectives of the study

1. To analyse the design and implementation of the Swasthya Ingit initiative.
2. To assess the impact of the initiative on healthcare accessibility in rural West Bengal.
3. To assess how well the initiative aligns with grassroots governance principles.
4. To identify challenges faced during implementation and propose recommendations for improvement.

3. Methodology

3.1 Research Design

To address the research questions, this study uses a qualitative policy analysis framework, relying solely on secondary data. The design is both descriptive, documenting the features of the Swasthya Ingit program, and analytical, interpreting the initiative's implementation and outcomes within the broader context of grassroots health governance in West Bengal. The analytical approach is guided by principles of decentralised governance, equity in healthcare access, and technology-enabled service delivery.

3.2 Data Sources

The study compiles data from a range of credible and authoritative sources published between 1999, marking the start of telemedicine in India, and 2025, with particular focus on post-2021 materials directly related to the Swasthya Ingit initiative. The sources include peer-reviewed journal articles on rural healthcare delivery, telemedicine adoption, and decentralized governance in India; newspaper articles with factual reporting and coverage of the Swasthya Ingit program; official government reports and policy documents from the Government of West Bengal, the Ministry of Health and Family Welfare, and the National Health Mission; official websites such as the National Telemedicine Service (eSanjeevani) portal and the West Bengal Health Department; and reports from reputable national and international agencies, including NITI Aayog, the World Health Organization, and the Economic Survey of India.

The analysis in this study focused on four main outcome dimensions, each closely tied to the research objectives. First, it examined the design and implementation of the Swasthya Ingit program, including its structure, governance mechanisms, and operational processes. Second, it assessed the program's impact on

healthcare accessibility, with particular attention to the availability, reach, and timeliness of services in rural areas. Third, it evaluated the extent to which the initiative aligns with grassroots governance principles, such as decentralisation, community participation, and local decision-making. Finally, it explored the key challenges faced during implementation, ranging from infrastructural and administrative issues to socio-cultural barriers, while also considering potential solutions. To analyse these dimensions, the study applied a thematic content analysis approach. Information from all sources was coded into predefined categories based on the research objectives, then cross-verified across multiple references to improve reliability and minimise bias. The findings were synthesised into an evidence-based narrative that combined both descriptive and analytical elements. While the study did not involve statistical testing due to its qualitative nature, it did incorporate descriptive statistics such as data on healthcare coverage, facility availability, and budget allocations from secondary sources to provide context. This integration of quantitative indicators with qualitative insights allowed for triangulation, strengthening the validity and depth of the policy analysis on Swasthya Ingit telemedicine.

6. Results and Discussion

6.1. Widespread Reach and Accessibility

The Swasthya-Ingit initiative, launched by the Government of West Bengal in August 2021, represents a major innovation in bridging healthcare access gaps, particularly in rural and underserved areas. Within its first year, the programme had already delivered more than 10 million teleconsultations (by December 2022), demonstrating strong demand for digital health services and institutional commitment to their expansion. By June 2025, utilisation had scaled dramatically, with more than 40.4 million consultations recorded across the state. The infrastructure supporting this expansion is extensive. Currently, the programme operates through more than 10,000 government health facilities, including 8,926 Sub-Health Centres (SHCs), 780 Primary Health Centres (PHCs), and 465 Urban Health Centres (UHCs). A further 10,357 facilities have been upgraded into Health and Wellness Centres (HWCs) equipped with digital consultation capacity. This network enables patients in geographically isolated areas to access specialist advice without travelling long distances, thereby alleviating pressure on tertiary hospitals and ensuring fairer distribution of health services.

Utilisation data reveal important demographic and regional trends. Women account for 63% of users, compared to 37% among men, indicating that telemedicine has been particularly successful in lowering gender-related barriers such as restricted mobility and caregiving responsibilities. At the district level, performance varies. Rampurhat, Murshidabad, Kalimpong East, and Burdwan have emerged as high performers, with Rampurhat alone registering a 22% increase in consultations. By contrast, Birbhum, Darjeeling, and Jalpaiguri are underperforming, underscoring persistent spatial inequities. Age-wise distribution further demonstrates diversity of use, while the 36–59 age group dominates statewide. In Kolkata, the 15–35 age group forms the majority of users, reflecting higher digital literacy and smartphone penetration among urban youth. These results highlight that Swasthya-Ingit is not only expanding rapidly but is also

beginning to align with broader public health goals, including the pursuit of Universal Health Coverage (UHC) and equitable access to care.

6.2. Impact on Healthcare Accessibility in Rural Areas of West Bengal

The impact of Swasthya-Ingit has been particularly significant in rural areas, where access to specialist care has historically been limited. Within the first ten days of its launch in August 2021, the initiative facilitated approximately 11,000 consultations, with women comprising 69% of patients (Sangbad Pratidin, 2025). This gendered uptake illustrates the initiative's role in addressing structural inequities in healthcare access. The programme's rural delivery model is supported by 2,362 telemedicine units, including 945 specialised hubs directly connected to expert doctors. Patients consult via video calls, and digital prescriptions are transmitted (often through WhatsApp) and delivered by local health workers. On average, each consultation lasts slightly over four minutes, ensuring efficiency and reducing patient waiting times. Importantly, inclusivity has been prioritised, with 0.1% of beneficiaries identifying as transgender, signalling outreach to marginalised groups often excluded from mainstream health services. Referral pathways have been another important contribution. Approximately 100,000 patients have been referred to state-operated medical colleges for further treatment (Sengupta, 2021). Common referrals include cases of pancreatic disorders, gastroenterological issues, and bacterial infections. Moreover, the initiative facilitates early detection of non-communicable diseases (NCDs) such as diabetes, hypertension, and mental health disorders, which require long-term management. Overall, the rural uptake of Swasthya-Ingit demonstrates the capacity of digital health platforms to overcome entrenched barriers of distance, cost, and scarcity of specialist doctors in non-urban districts.

6.3. Alignment with Grassroots Governance Principles

Beyond expanding access, Swasthya-Ingit exemplifies a decentralised and participatory model of healthcare governance. Implementation has been routed through Gram Panchayats and local health authorities, which have converted Suswasthya Kendras into digitally enabled e-clinics. This decentralised approach strengthens accountability, fosters community ownership, and ensures responsiveness to local needs (Millennium Post, 2021). The role of Accredited Social Health Activists (ASHAs) and community health volunteers is critical. These frontline workers support patients in scheduling appointments, navigating digital platforms, and interpreting medical instructions, thereby bridging gaps in digital literacy (Govt. of West Bengal, 2021; Times of India, 2023). Their involvement has been essential in generating community trust, especially in rural areas where unfamiliarity with technology might otherwise discourage participation. At the same time, the programme's centralised digital platform allows real-time monitoring, data collection, and analysis, enabling administrators to track usage patterns, identify disparities, and design responsive interventions. This hybrid model, combining top-down digital innovation with bottom-up participatory governance, demonstrates how digital health can reinforce both service delivery and democratic accountability.

6.4. Challenges and Recommendations for Improvement

Despite its significant contributions to rural healthcare access, the Swasthya Ingit initiative in West Bengal faces various structural and operational challenges that threaten its expansion and long-term viability. One major issue is the ongoing infrastructure gap in many remote and tribal areas, particularly in districts like Purulia and Jalpaiguri. These regions experience unreliable internet connections and frequent power outages, disrupting teleconsultation services and reducing the efficiency of e-clinics (The Times of India, 2023). Additionally, a substantial digital divide persists, impacting service delivery, especially among elderly populations and those with low literacy levels who often cannot operate digital platforms independently. This digital literacy gap creates bottlenecks at Suswasthya Kendras, as many users depend entirely on ASHA workers or volunteers for assistance. Beyond infrastructural challenges, human resource limitations also pose major hurdles. Accredited social health activists (ASHAs) and Auxiliary nurse midwives (ANMs), already responsible for maternal and child health, often struggle to manage additional tasks related to facilitating telemedicine services without adequate training or financial incentives (Dixit, 2024). This affects both service quality and worker satisfaction. Another obstacle is the incomplete care continuum; while virtual consultations are generally effective, referral pathways for diagnostics and specialised treatment remain weak. Patients still face difficulties accessing physical diagnostic services or hospital care due to logistical issues. To enhance the effectiveness of Swasthya Ingit, several recommendations have been proposed investing in rural telecom infrastructure and solar backup systems; organising targeted digital literacy initiatives for vulnerable groups such as the elderly and women; strengthening capacity building and providing incentives to frontline health workers; and integrating diagnostics and pharmacy support through mobile labs or local partnerships. These measures would help create a more inclusive, resilient, and responsive healthcare system that leverages the grassroots strengths of the initiative.

This study highlights the transformative potential of the Swasthya Ingit telemedicine initiative in expanding healthcare access across West Bengal. By June 2025, the program had helped over 40 million beneficiaries through more than 10,000 facilities, demonstrating strong institutional commitment and high community demand. A key trend is the dominance of female users (63–69%), showing that telemedicine helps break down socio-cultural and mobility barriers that often limit women's healthcare access. District-level differences in use, such as higher uptake in Murshidabad and Rampurhat compared to lower use in Darjeeling and Jalpaiguri, reveal the uneven impact of local governance, infrastructure, and community involvement in adopting digital health solutions.

Demographic trends further show that middle-aged adults (36–59 years) make up a significant portion of users, while younger populations are more prominent in urban districts such as Kolkata. These variations illustrate that technology adoption is not uniform but influenced by health needs, digital literacy, and socio-economic factors. Such findings align with broader research, where Peri et al. (2022) observed that indirect telemedicine interventions mediated by frontline workers resulted in greater health improvements than direct interventions. This echoes the role of ASHAs and Panchayati Raj Institutions in Swasthya Ingit, which promotes community participation and builds trust in service delivery. The results also match observations by Jabarethina and John

(2023) and Maroju et al. (2023), who noted that COVID-19 sped up telemedicine adoption while exposing ongoing challenges such as connectivity, digital literacy, and quality assurance. These issues were also evident in this study, especially through weak internet infrastructure, limited follow-up mechanisms, and inadequate provider training. Compared to earlier projects like the Karnataka Telemedicine Project (Dasgupta & Deb, 2008), Swasthya Ingit stands out for its decentralised governance model and incorporation of community institutions under the project. One can avail the telemedicine facility from any Suswasthya Kendras (health centres) spread across the rural parts of the state. However, the limited integration of diagnostics, lifestyle counselling, and referral pathways reveals gaps in ensuring continuous care. Without these connections, telemedicine risks serving only as an entry point without guaranteeing long-term treatment adherence, especially for tuberculosis and chronic diseases. Nonetheless, Swasthya Ingit shows how digital health can be integrated into grassroots governance to deliver more equitable services. Its gender-sensitive approach reflects progress toward reducing long-standing healthcare disparities, while its reliance on decentralised institutions underscores the importance of participatory governance in digital health implementation. At the same time, district-level disparities observed in this study warn against assuming uniform benefits across different contexts. Investments in digital infrastructure, systematic provider training, and stronger referral systems are still needed to sustain early successes.

This analysis has some limitations. Relying on secondary data restricted the ability to gather direct patient or provider perspectives. Although triangulation using government reports, academic studies, and news sources improved reliability, the lack of primary field data limited deeper insights into the lived experiences of users and the practical challenges faced by healthcare workers. Future research should include household surveys and qualitative interviews to better understand digital literacy barriers, local governance issues, and patient satisfaction with teleconsultation services.

7. CONCLUSION

Telemedicine interventions like Swasthya Ingit represent a significant advance in rural healthcare, aligning with the Indian government's broader digital health initiatives under the Ayushman Bharat Digital Mission (ABDM). These platforms broaden access to medical consultation, diagnosis, and follow-up services in remote areas, addressing long-standing disparities in healthcare access. More importantly, telemedicine holds the transformative potential to strengthen decentralised health governance by increasing transparency, enabling real-time data monitoring, and supporting evidence-based decisions at the local level. To achieve this, strategic actions are necessary: infrastructure development should prioritise reliable internet and power in underserved regions; ongoing training programmes must equip frontline workers such as Accredited Social Health Activists (ASHAs) and Auxiliary Nurse Midwives (ANMs) with digital literacy and e-governance skills; and Village Health Sanitation and Nutrition Committees (VHSNCs) should be formally integrated into telemedicine oversight structures to promote community participation and accountability. Additionally, incorporating platforms like Swasthya Ingit into state health systems through formal policy alignment with the National Health Policy (2017) and the Indian Public Health Standards (IPHS) will support sustainability and coherence. If these steps are taken, West Bengal can position itself as a model for integrating telemedicine

into health governance, demonstrating how digital health can function as a tool for participatory, accountable, and equitable rural healthcare delivery.

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