



Beneficiaries at Telemedicine Centre, Bahmnakheda, Hardoi

Impact Assessment Report

Strengthening of Community Health Centers for Promoting Health Care

FY 2021-22 to 2023-24

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Acknowledgements

SGS would like to place on record its sincere appreciation to HCL Foundation for the opportunity to undertake this impact assessment of the telemedicine programme. We are grateful for the trust placed in us and for the consistent guidance, strategic direction, and constructive engagement provided throughout the study period. The Foundation's commitment to strengthening access to quality healthcare in underserved communities provided a strong foundation for this assessment.

We extend our heartfelt thanks to the programme implementing partners and the telemedicine centre teams for their invaluable cooperation during fieldwork. Their support in facilitating site visits, coordinating beneficiary interactions, sharing operational data, and explaining on-ground processes enabled the assessment team to gain a comprehensive understanding of programme implementation and service delivery.

We are particularly grateful to the doctors, nurses, and healthcare staff associated with the telemedicine centres who generously shared their time and professional insights. Their reflections on clinical practices, patient management, and the evolving role of telemedicine were central to understanding the programme's effectiveness and quality of care.

We also wish to acknowledge with deep gratitude the beneficiaries who participated in surveys, focus group discussions, and informal interactions. Their willingness to share personal experiences, challenges, and outcomes provided the most valuable evidence for assessing programme relevance, impact, and sustainability. The voices of beneficiaries remain at the core of this assessment.

We would like to thank the district and local health authorities who extended their support during field visits and shared perspectives on the integration of telemedicine within the broader public health system.

Finally, we acknowledge the dedicated efforts of the SGS field investigators, researchers, and analysis team, whose professionalism, rigour, and commitment ensured the quality, integrity, and timely completion of this study. Their contributions were essential in bringing together diverse sources of evidence into a coherent and credible assessment.



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Executive Summary

Access to timely and affordable healthcare remains a persistent challenge in rural and semi-urban India. Out-of-Pocket Expenditure (OOPE) accounted for 48.8% of Total Health Expenditure in 2018–19, placing a heavy financial burden on households. At the same time, the availability of doctors in rural areas remains limited, with the national doctor-to-population ratio estimated at around 1:1500, below the World Health Organization norm of 1:1000.

In this context, telemedicine has emerged as an important approach to strengthen primary healthcare delivery by bringing medical expertise closer to underserved communities.

HCL Foundation supported the establishment and operation of 13 telemedicine centres with the objective of improving access to medical consultations, reducing avoidable hospital visits, and enabling early diagnosis and treatment. This impact assessment was undertaken by SGS to examine the relevance, effectiveness, efficiency, impact, sustainability, and overall value for money of the telemedicine programme.

The assessment adopted a mixed-methods approach combining a review of project documents with primary data collection across four telemedicine centres. Primary data included 186 beneficiary surveys, focus group discussions, key informant interviews with healthcare staff and the HCL team, and direct observations of centre operations and live teleconsultations. The analysis was guided by the OECD-DAC evaluation framework.

Key insights:

Findings indicate that the programme is highly relevant to local healthcare needs. Most beneficiaries use telemedicine for common and chronic conditions such as hypertension, diabetes, body pain, and general check-ups, conditions that require regular monitoring rather than one-time care.

Prior to telemedicine, over 40% beneficiaries were depended on distant district hospitals or private clinics, often facing long travel distances, long waiting times, and high costs.

The introduction of telemedicine has significantly reduced the access barriers and enabled earlier and more regular Healthcare-seeking behaviour.

The programme demonstrates strong effectiveness and service quality. Beneficiaries reported high levels of satisfaction with the consultation process, the time spent by doctors, and the clarity of medical advice. Field observations confirmed that workflows are simple, staff support is adequate, and doctor–patient interaction remains strong despite the digital mode of delivery. Reliable connectivity and standardised processes have contributed to smooth and consistent service delivery.

In terms of efficiency, the programme has generated substantial time and cost savings. A large proportion of

beneficiaries reported saving travel time and expenses, and many indicated a reduced need to visit district hospitals. These efficiency gains benefit both households and the health system by reducing the economic burden on families and easing pressure on secondary and tertiary facilities.

The programme has also created meaningful health impact. More than half of the beneficiaries associated telemedicine with early detection of illness and avoidance of serious complications. Reduced hospital visits and improved continuity of care suggest that telemedicine is contributing to preventive care and better disease management. Case evidence and clinical observations further highlight the role of telemedicine in enabling early diagnosis, including of complex and rare conditions that are difficult to identify at the primary care level.

91% of the beneficiaries expressed willingness to continue using telemedicine in the future. Trust in the service, positive user experiences, and strong word-of-mouth referrals have emerged as key drivers of sustained utilisation. At the same time, beneficiaries and staff highlighted areas for strengthening, including improved connectivity, better medicine availability at centre level, and enhanced specialist availability for complex cases.

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A Social Return on Investment (SROI) analysis was also undertaken to assess the value generated relative to the financial investment made. Using a consultation-based, outcome-driven approach, the analysis estimates that the programme generated a net social value of approximately ₹12.6 crore in one year against an annual investment of ₹4.23 crore, resulting in an:

SROI of 3 : 1

This indicates that for every ₹1 invested by HCL Foundation, approximately ₹3 of social value was created through reduced hospital visits, prevention of complications, and savings in time and travel costs⁴.

Way Forward

Looking ahead, the programme has strong potential for further consolidation and scale-up. Priority actions include strengthening specialist availability for complex cases, improving connectivity reliability and equipment maintenance, enhancing medicine availability at centre level, and providing structured support for first-time and elderly users.

Formalising community outreach mechanisms through frontline health workers and Panchayat platforms can further expand reach among underserved populations. With these improvements, the telemedicine initiative is well positioned to play a sustained role in strengthening primary healthcare delivery and reducing health inequities in rural and semi-urban areas.



Repeat Usage of the Facility

79%

of respondents have visited the telemedicine centre two to three times, indicating strong acceptance and sustained utilisation of the service.



Found the Process Easy

88%

beneficiaries reported that the registration and consultation process was easy or very easy, reflecting user-friendly workflows and good staff support.



Quick Access to Services

67%

of users experienced faster access to medical care, reducing delays caused by travel and long waiting times.



SROI

3 : 1

For every ₹1 invested, the programme generated approximately ₹3 of social value, demonstrating strong value for money.

SDGs Covered

SDG	Target	Contribution Pathway
 <p>1 NO POVERTY</p>	Target 3.8 – Universal health coverage	Improves access to quality medical consultations and early treatment in underserved communities through telemedicine.
 <p>3 GOOD HEALTH AND WELL-BEING</p>	Target 1.5 – Reduce vulnerability to economic shocks	Reduces household healthcare spending by lowering travel, time, and out-of-pocket costs.
 <p>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</p>	Target 10.2 – Promote social inclusion	Bridges rural–urban gaps in access to specialist healthcare through digital connectivity.
 <p>10 REDUCED INEQUALITIES</p>	Target 9.c – Expand access to ICT	Uses digital health platforms to strengthen healthcare delivery in remote areas.



Introduction

Context Setting

HEALTHCARE WORKFORCE & ACCESS CHALLENGES

India has long faced a shortage of healthcare professionals relative to its population. The national doctor-to-population ratio stands at approximately 1:1500, lower than the World Health Organization's recommended ratio of 1:1000. This gap is even more acute in rural areas, where the ratio may be as high as 1:2500, reflecting a significant urban-rural divide in the availability of qualified medical practitioners.

Moreover, about 70% of doctors practice in urban areas, serving only about 30% of the population, while the majority of healthcare infrastructure and hospital beds are concentrated in cities. This rural deficit in healthcare provision imposes considerable burdens on rural populations, who must often travel long distances—sometimes exceeding 100 kilometres—to reach primary or specialised care facilities.

TELEMEDICINE & DIGITAL HEALTH GROWTH

In response to these access challenges, telemedicine has rapidly scaled in India, particularly after the COVID-19 pandemic accelerated digital health adoption. The government's eSanjeevani telemedicine platform has facilitated hundreds of millions of consultations across all states and Union

Territories, with the majority of utilisation in public health facilities, including Health and Wellness Centres (HWCs). The expansion of telemedicine is strongly supported by national digital health initiatives. For example, the Ayushman Bharat Digital Mission has created over 73 crore Ayushman Bharat Health Accounts (ABHA) and registered more than 5 lakh health professionals, building foundational infrastructure for digitally enabled healthcare services, including teleconsultations.

Telemedicine's role in contributing to equitable access is also reflected in market trends, with India's telemedicine sector projected to grow rapidly in the coming decade, driven by increasing digital connectivity, smartphone penetration, and demand for remote care.

TELECONSULTATIONS - AS A SOLUTION

In rural districts such as Hardoi in Uttar Pradesh, geographic isolation, limited clinical capacity, and inadequate specialists at primary health facilities pose significant impediments to timely and quality healthcare. Telemedicine carries the potential to bridge these gaps by enabling remote clinical consultations, rapid diagnostics, and patient follow-ups without the need for patients to travel to distant urban centres,

Public spending on healthcare in India remains relatively low, at around 2.1% of GDP, compared to a global average of nearly 6%. As a result, a large share of healthcare costs about 60% is paid directly by individuals from their own pockets. This high out-of-pocket expenditure places a significant financial burden on economically vulnerable households and often discourages them from seeking timely and preventive healthcare services.

thereby improving health outcomes and reducing direct and indirect costs for rural communities.

About the Project

Phase wise implementation



Phase 1

Project sites were finalised in coordination with district health authorities, followed by facility assessments to ensure infrastructure and connectivity readiness.

Phase 2

Telemedicine equipment, diagnostic tools, and digital platforms were installed and integrated at selected Health and Wellness Centres.

Phase 3

Healthcare staff were trained, and tele-consultation services for general and specialist care were operationalised at the centres.

Phase 4

Service delivery, equipment performance, and data reporting were regularly monitored to ensure quality, continuity, and system compliance.

The HCL Foundation's support in establishing telemedicine centres equipped with diagnostic tools, digital platforms, and trained personnel supports the Government of India's health policy objectives and provides a sustainable model of healthcare delivery that places technology and community needs at the forefront of rural health system strengthening.

The project was designed keeping in mind the ground realities of rural Health and Wellness Centres (HWCs), with a focus on ease of operations, reliability of services, and long-term sustainability. The approach combined careful planning, timely installation of infrastructure, training of healthcare staff, and regular monitoring to enable uninterrupted delivery of tele-consultation services. In the initial phase, the programme team worked closely with district

health authorities to identify suitable HWCs and assess their readiness for telemedicine services. This included reviewing available space, electricity supply, internet connectivity, and basic facility conditions. These assessments helped ensure that the selected centres were well-prepared to host telemedicine equipment and provide services without disrupting routine healthcare activities. The next phase focused on setting up the required infrastructure at the centres, including telemedicine equipment, diagnostic devices, and IT hardware, along with integration of the ReMeDi digital platform to facilitate remote consultations.

Capacity building was a key part of the implementation model. Medical and paramedical staff were trained on how to use the telemedicine equipment, manage patient flow,

The phased approach helped embed **telemedicine services** into the routine functioning of HWCs and ensured consistent **access** to healthcare for rural communities.

and support consultations with remote doctors. Once services were rolled out, regular monitoring and review meetings were conducted to track progress, address operational challenges, and improve service delivery.

About the Organizations

HCL Foundation

HCLFoundation (HCLF) was established in 2011 as the corporate social responsibility arm of HCLTech in India. It is a value-driven, not-for-profit organization that thrives in contributing toward national and international development goals, impacting the lives of people and communities through long-term sustainable programs. The foundation aims to alleviate poverty and achieve inclusive growth and development through a life cycle-based integrated community development approach, with thematic focus on education, health, livelihoods & skilling, environment and disaster risk reduction & response. Child protective strategies, inclusion, and gender transformative approaches remain central in all initiatives of the HCLFoundation, thus ensuring comprehensive development

Neurosynaptic Communications Pvt. Ltd.

Neurosynaptic Communications Pvt. Ltd. is a healthcare technology company specialising in telemedicine and digital health solutions. The organisation has developed the ReMeDi (Remote Medical Diagnostics) platform, which enables remote consultations, digital diagnostics, and real-time clinical decision support. With experience in implementing telemedicine programmes in partnership with governments and CSR organisations, Neurosynaptic plays a key role in operationalising technology-driven healthcare delivery at primary health facilities, especially in remote and underserved geographies.

Samuday
by HCLFoundation

Project Samuday

Samuday is an outcome of HCL's commitment to uplift rural India. Established in 2015, Samuday intends to develop a sustainable, scalable, and replicable model – a source code for the economic and social development of rural areas in partnership with central and State Governments, local communities, NGOs, knowledge institutions, and allied partners. HCL Foundation do this through optimal interventions across Agriculture, Education, Health, Infrastructure, Livelihood, and WASH (Water, Sanitation & Hygiene) in selected villages. The programme is designed to help the local people identify their problems, co-create solutions, and then implement the same on their own with professional support from team Samuday, thereby, lending the dimension of sustainability and ownership to the whole vision of development. Currently implemented in 11 blocks of Hardoi in Uttar Pradesh, Samuday is operational in more than 1900+ villages from 524 Gram Panchayats, impacting 3.16 million people.



APPROACH & METHODOLOGY

Approach & Methodology

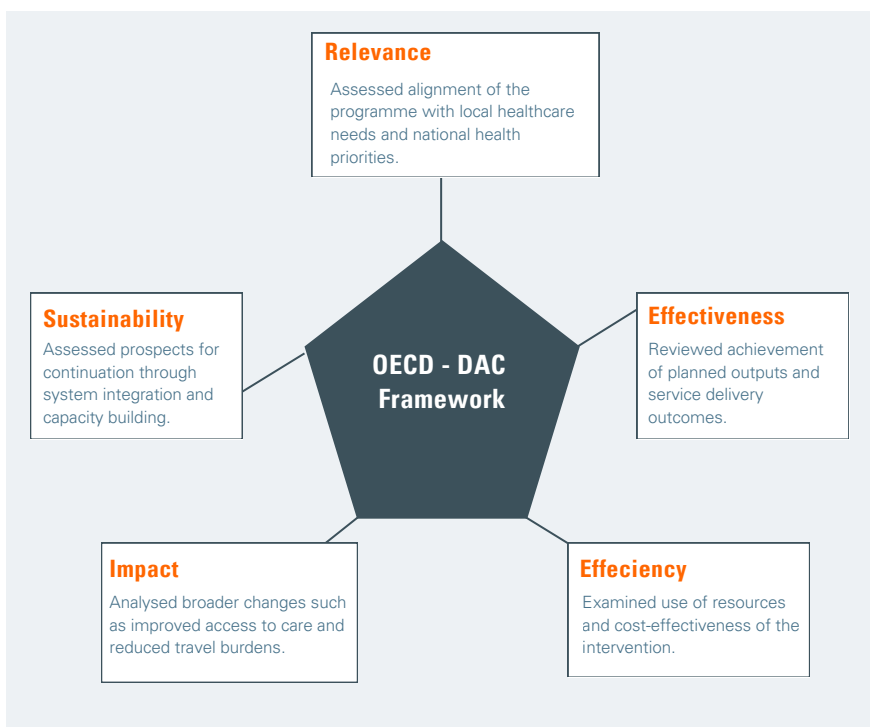
The impact assessment of the programme was undertaken using a mixed-methods approach, combining both quantitative and qualitative techniques to capture a comprehensive picture of programme performance and outcomes. The assessment focused on understanding how the telemedicine services were implemented, how they were utilised by beneficiaries, and the extent to which the intervention contributed to improved access to healthcare in rural settings. Emphasis was placed on gathering evidence from multiple sources to ensure balanced and credible findings.

Secondary data review formed a key component of the assessment. Monthly data registers, consultation data and other relevant documents maintained by the implementing agency were reviewed to analyse trends in patient footfall, types of consultations, and service delivery patterns across the telemedicine centres. Project documents, including the Memorandum of Understanding, guidelines, were also examined along with the visits to the centers to understand the intended design, scope, and implementation processes of the intervention.



Beneficiary for consultation

OECD DAC Dimensions



OECD–DAC Framework

The impact assessment was guided by the OECD–DAC evaluation framework to ensure a structured and widely accepted approach to assessing programme performance and outcomes. This framework provided a clear lens to examine the relevance, effectiveness, efficiency, impact, and sustainability of the telemedicine intervention. By using these dimensions, the assessment was able to systematically review both the design and implementation of the programme, as well as its contribution towards improving access to healthcare in rural communities.

Theory of Change

Inputs

- Telemedicine equipment and diagnostic devices
- IT hardware and ReMeDi digital platform
- Trained medical and paramedical staff
- Medicines and consumables

Activities

- Installation of telemedicine systems at HWCs
- Training of healthcare staff
- Delivery of general and specialist tele-consultations
- Diagnostics, referrals, and follow-ups

Outputs

- Functional telemedicine centres
- Increased number of consultations
- Availability of specialist advice at HWCs
- Improved facility-level service capacity

Outcomes

- Improved access to healthcare services
- Reduced travel time and costs for patients
- Higher utilisation of HWCs
- Better continuity of care

Impact

- Improved health-seeking behaviour
- Early diagnosis and treatment
- Strengthened primary healthcare systems
- Reduced healthcare inequities in rural areas

The Theory of Change establishes linkages with telemedicine investments and service delivery activities to improved access, continuity of care, and strengthened primary healthcare systems, ultimately contributing to better health outcomes for rural communities.



Stakeholders Involved

The telemedicine programme involved multiple stakeholders operating at different levels of the healthcare system. Each stakeholder group played a distinct role in enabling programme implementation, service delivery, and sustainability.

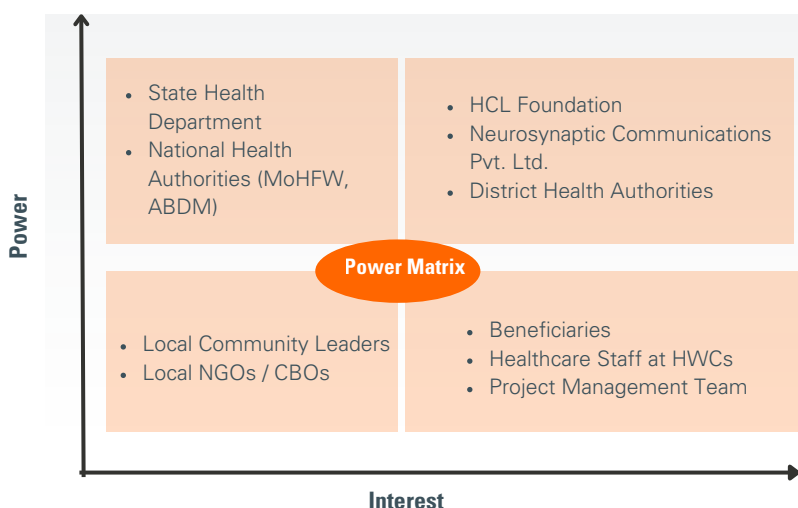
The micro level included stakeholders who directly interact with the telemedicine services, such as beneficiaries, healthcare staff at Health and Wellness Centres, and paramedical personnel. These stakeholders are closest to service delivery and play a critical role in day-to-day operations and user experience.

The meso level comprised stakeholders responsible for operational management and coordination, including the implementing agency, project coordinators, project managers, and district health authorities. These stakeholders act as a bridge between policy intent and on-ground execution, ensuring that programme activities are implemented as planned.

The macro level included stakeholders who provide strategic direction, funding, and policy alignment, such as HCL Foundation, the State Health Department, and national health authorities. These stakeholders influence the enabling environment for the programme and are key to its long-term sustainability.

TABLE 1 Stakeholder Mapping

STAKEHOLDER GROUP	LEVEL	ROLE
Beneficiaries (patients)	Micro	Avail tele-consultation services and diagnostics; primary recipients of programme benefits
Healthcare staff		Facilitate tele-consultations, manage patient flow, operate equipment, and support service delivery
Paramedical staff		Conduct diagnostics, assist consultations, and manage records
Neurosynaptic Communications Pvt. Ltd.	Meso	Implementing partner responsible for technology deployment and operations
Project coordinators and managers		Oversee field-level implementation, monitoring, and reporting
District Health Authorities		Provide approvals, integration support, and operational oversight
HCL Foundation	Macro	CSR funding partner providing financial support and strategic direction
State Health Department (Uttar Pradesh)		Policy alignment, system integration, and regulatory oversight
National health ecosystem (MoHFW, ABDM)		Alignment with national digital health policies and guidelines



The **Power-Interest** Matrix was used to assess the relative influence and engagement levels of key stakeholders in the telemedicine programme. This helped identify stakeholders critical to decision-making, service delivery, and long-term sustainability.

Assessment - Deep Dive

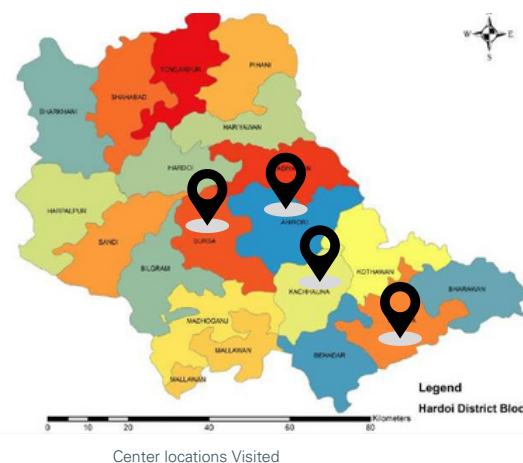
TABLE 2 Stakeholder Coverage and Methods Used

STAKEHOLDER GROUP	PURPOSE OF ENGAGEMENT	METHOD USED	SAMPLE / COVERAGE
Beneficiaries (patients)	Capture service experience and satisfaction	Surveys	186
Beneficiaries (patients)	Understand perceptions, challenges, suggestions	Focused Group Discussions	2 FGDs covering 20 Beneficiaries
Healthcare Staff at Centres	Assess service delivery and operational issues	Discussions and Centre observations	4 centres
Remote Doctors	Review consultation workflow and system usability	Live Interaction	1 Doctor
District Health Authorities	Gather views on system integration and support	Key Informant Interviews	CMO
HCL Foundation Team	Capture programme oversight and scale-up vision	Key Informant Interviews	Program Manager
Tele - consultations	Assess live service delivery and connectivity	Observations	3

To gain a deeper understanding of how the telemedicine programme was working on the ground, SGS adopted a focused field-based assessment approach. The study combined beneficiary feedback, stakeholder inputs, and direct observation of telemedicine operations to capture real-time service experience, system performance, and implementation quality.

The assessment emphasised live centre visits, direct user interactions, and observation of consultations. This helped validate how services were actually being delivered and experienced at Health and Wellness Centres.

Beneficiaries were **randomly selected** from those present at the centres on the day of data collection. This ensured real-time user feedback from active service users with no pre-screening or filtering to avoid bias

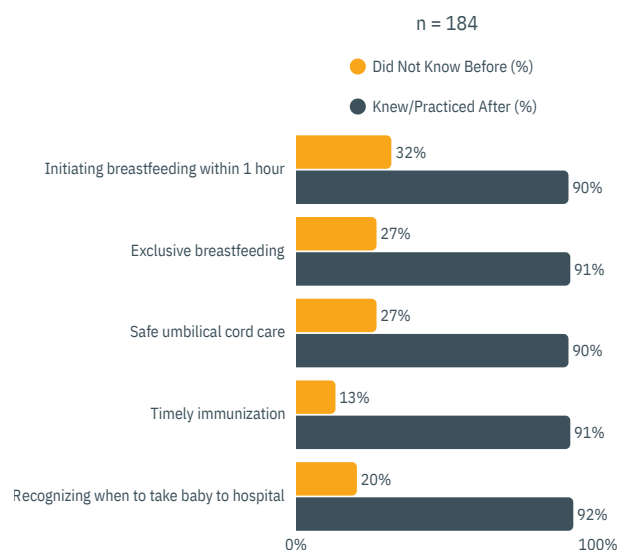


Ethical Considerations

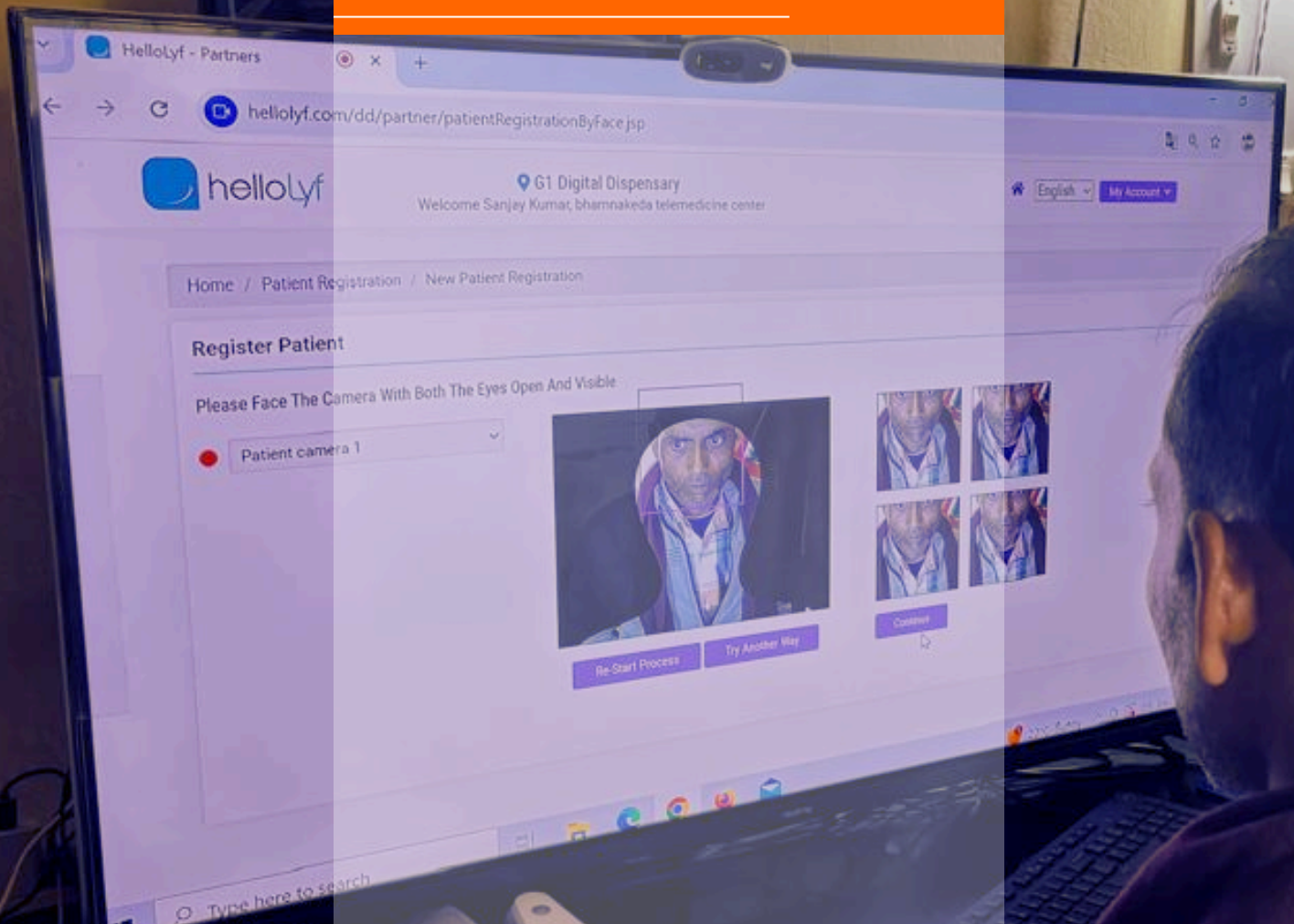
- The purpose of the assessment was clearly explained to all respondents, and verbal consent was obtained before surveys, discussions, and interviews.
- Participation was voluntary, and respondents were informed of their right to skip questions or withdraw at any stage.
- All personal information was kept confidential, and no identifying details were included in the report.
- Findings were presented in aggregated form to protect individual privacy.
- During centre visits and observation of tele-consultations, care was taken to avoid disruption of routine services and maintain patient confidentiality.

Study Limitations

- The assessment covered six telemedicine centres, which may not fully represent variations across all programme locations.
- Beneficiary surveys were conducted with users present at the centres on the day of data collection, which may reflect the views of active service users only.
- The study relied partly on self-reported feedback, which may be subject to response bias.
- Intermittent connectivity issues at some centres limited consistent observation of live tele-consultations.



Assessment Findings & Analysis

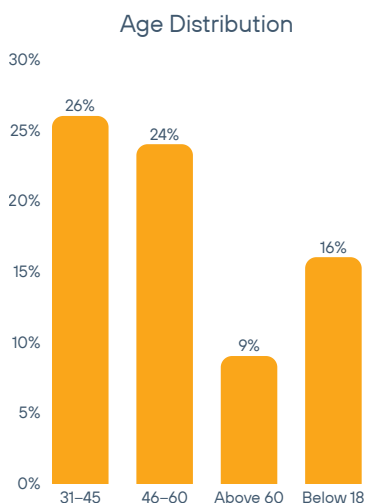


This section presents the key findings of the impact assessment based on beneficiary surveys, field observations, and stakeholder interactions. It highlights how telemedicine services are being utilized, how they are experienced by beneficiaries, and what changes they have brought about in access to healthcare. The section also draws on qualitative insights and on-ground observations to interpret the data and provide a balanced understanding of programme performance and early outcomes.

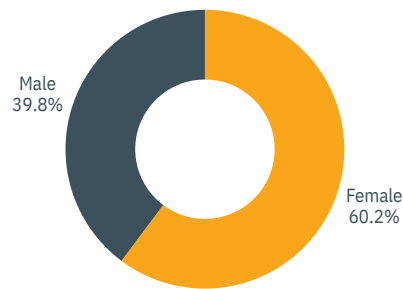
Demographic Profile

The beneficiary survey covered a diverse age group, reflecting the broad reach of telemedicine services across different population segments. The distribution indicates that the telemedicine services are being utilised across life stages, with particularly high uptake among working-age adults and middle-aged beneficiaries.

In terms of gender, the respondent profile showed a higher participation of women. Female beneficiaries accounted for 60% of the total respondents, while male beneficiaries constituted 40%. This suggests that telemedicine services at Health and Wellness Centres are playing an important role in improving healthcare access for women, who often face greater mobility constraints and caregiving responsibilities that limit their ability to seek timely medical care.



Gender Distribution

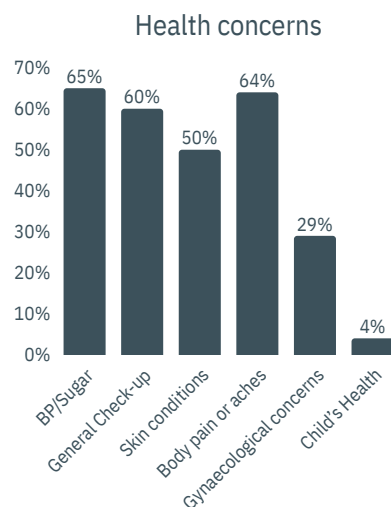


Field observations during centre visits further highlighted access-related challenges faced by rural communities. It was observed that several beneficiaries reside far from even the nearest Primary Health Centres, making regular visits to healthcare facilities both time-consuming and costly. For such populations, the availability of telemedicine services at local centres significantly reduces travel burdens and improves access to timely medical consultations.

Relevance

Addressing Everyday Health Needs

The telemedicine centres are being used largely for common and recurring health concerns such as blood pressure and diabetes, general check-ups, body pain, and skin conditions. These are not one-time medical needs but issues that require regular monitoring, follow-ups, and timely medical advice. For many beneficiaries, especially older adults and those managing chronic conditions, the availability of telemedicine at the local centre has made it easier to seek care without postponing treatment.



The way people are using the service shows that telemedicine is not seen only as an emergency option, but as a



Earlier, we had to travel nearly 30 kilometres to access specialised healthcare. The journey was long and exhausting, and it would usually take up almost the entire day.

Sushmita, Female, 45 years

dependable part of their regular healthcare routine. This highlights its practical relevance as a primary healthcare support system that encourages early consultation, continuity of care, and preventive health practices within the community.

Bridging Long-Standing Access Barriers

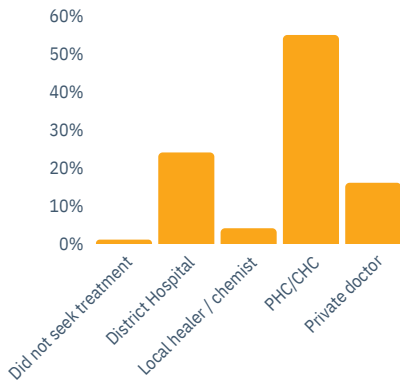
Before telemedicine was available at their local centres, people in the survey reported multiple barriers in accessing healthcare.

A multi-site study reported that outpatient visit costs in private hospitals ranged up to around ₹1,251 per visit (median), significantly higher than visits at public district hospitals.

55% of the respondents usually went to nearby Primary or Community Health Centres, and nearly one-fourth travelled to district hospitals for treatment. 16% of the respondents even turned to private doctors in towns, while a small number avoided care entirely because of distance and cost.

When asked about earlier access to healthcare facilities, 75% respondents described it as "somewhat difficult" or "very difficult," mainly due to long travel distances, high expenses, and long waiting times.

Treatment Before Telemedicine

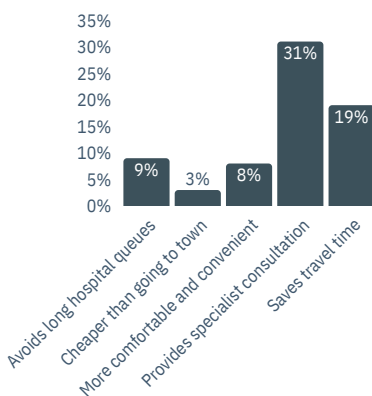


These access challenges are not just anecdotal. Evidence from national studies on outpatient care shows that the average cost of an outpatient visit to a private provider can be considerably higher than public facilities, with formal private providers charging several times more per visit than government services, often driven by consultation fees, diagnostics, and medicines. For many rural families, such out-of-pocket costs can be a deterrent especially when the journey itself costs time and money.

Against this backdrop, telemedicine fills several important gaps. Beneficiaries highlighted that it reduces travel time, improves comfort and convenience, and enables access to specialist consultations locally something that previously required long journeys and additional expenses.

31% respondents specifically valued the availability of specialist consultations at the centre, an opportunity they otherwise had to seek in towns or private clinics. For families already stretched financially, this meant fewer lost wages, lower transport costs, and fewer days away from work or household responsibilities.

Gaps Filled by Telemedicine

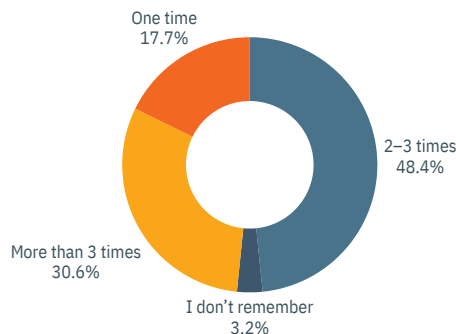


Therefore, telemedicine centres supports routine health needs, bringing specialist advice closer to home, and reducing the everyday burdens of distance, cost, and waiting time that earlier made healthcare difficult to access. For many families, telemedicine has changed healthcare from something that required a full day of travel into something that is available within their village at their convenience. This practical shift in access makes the intervention not just useful, but genuinely meaningful for rural households.

Effectiveness

Nearly half of the respondents had used the service two to three times, and almost one-third had used it more than three times. This pattern of repeat usage suggests that beneficiaries find the service useful, dependable, and more importantly, the beneficiaries trusts the services.

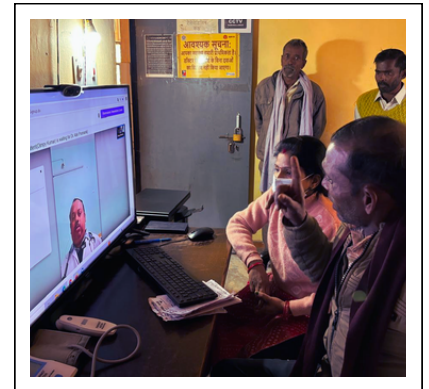
Frequency of Telemedicine Usage



In terms of user experience, 88% respondents described the telemedicine process as easy or very easy. This reflects the simplicity of the workflow at the centres and the support provided by healthcare staff. For many beneficiaries, especially those unfamiliar with digital tools and technology, the fact that the services felt easy to them played an important role in building trust and comfort with telemedicine.

Beneficiaries also reported positive experiences with the doctors during tele-consultations. More than eight out of ten respondents felt that the doctor spent enough time understanding their problem and addressing their concerns. This indicates that the consultations were not rushed and that patients felt heard and taken seriously, despite the interaction being conducted remotely.

These survey findings were strongly reinforced by SGS' field observations. During centre visits, it was observed that the telemedicine process was simple and well-organised. When patients arrived, healthcare staff first asked about their health concerns and checked whether the patient had any previous consultation records in the system. Based on this, the patient was then connected to the appropriate doctor.



Patient Consulting with a Doc. Bahmankheda Telemedicine Centre

The interactions between doctors and patients were observed to be warm and respectful, with good rapport maintained throughout the consultation similar to an in-person consultation setting. With stable internet connectivity, the audio and video quality allowed smooth conversations, making it easier for doctors to ask follow-up questions and for patients to explain their symptoms.

After the consultation, prescriptions were generated digitally and printed at the centre, and medicines were provided as prescribed. This end-to-end flow from registration to consultation to medicines worked efficiently and without visible confusion, reflecting a well-functioning service delivery model.



I once had a severe cold that did not improve despite visiting several doctors. After consulting a telemedicine doctor, I was prescribed a medicine, and I have been completely fine since then.

Ramesh, Male, 32 years

The effectiveness of the telemedicine programme lies not only in positive user experience, but in how it is reshaping care-seeking behaviour at the primary level. The high level of repeat usage indicates that beneficiaries are no longer treating telemedicine as a one-off alternative, but as a dependable part of their routine healthcare. This shift is important in rural settings, where people often delay follow-ups or discontinue treatment because of travel burdens or costs.

From a service delivery perspective, the programme demonstrates strong functional effectiveness. The ability to retrieve previous consultation records, link patients to appropriate doctors based on their health concern and previous consultations within a structured workflow shows that the model is operating as intended.

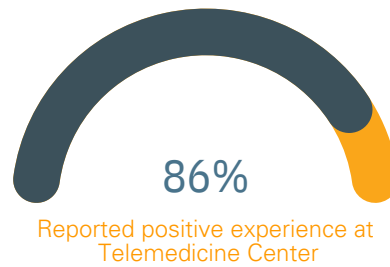
Most importantly, the effectiveness of the programme is reflected in tangible health outcomes at the individual level. Beneficiary accounts of recovery after telemedicine-based treatment, even when earlier care had failed, point to improved quality and appropriateness of medical advice. When seen together with repeat usage and positive care experiences, these outcomes suggest that telemedicine is not just improving access, but is delivering clinically meaningful care that beneficiaries trust and act upon.

Efficiency

The efficiency of the telemedicine programme is reflected in how smoothly services are delivered, how much time they save, how reliably the system functions, and how much financial burden they reduce for households. Together, these factors shape whether telemedicine is not just accessible, but also practical and sustainable in everyday life.

In terms of service convenience, 86% beneficiaries reported a positive experience. Only 11% found it a bit confusing. This suggests that the service design covering registration, vitals, consultation, and prescription is largely user-friendly and well supported by staff.

The low proportion of users reporting confusion indicates that operational bottlenecks are limited and that the service flow is well adapted to the needs of rural users.



89%
Time savings emerged as one of the most important efficiency gains. 89% of respondents felt that telemedicine saves time.

Only 4% felt it does not save time at all. Telemedicine, therefore, is meaningfully reducing the time burden associated with healthcare. In rural contexts, where people often lose an entire day travelling to a hospital and waiting for consultations, these time savings translate into fewer missed workdays, reduced wage loss, and less disruption to household responsibilities. A study conducted over a period of 14 days across two major tertiary care hospitals in Western India found that patients waited an average of 2.1 hours from the time of entering the hospital until being attended by a doctor. From an efficiency perspective, the programme is therefore reducing both direct and indirect costs of care.

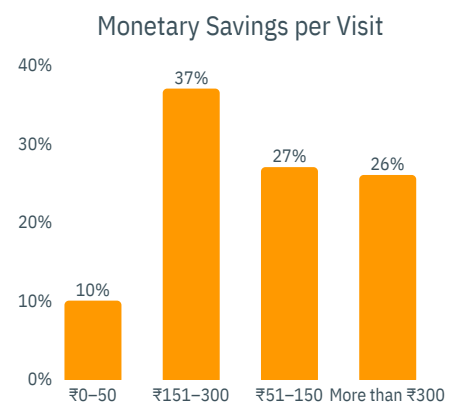


The video and audio work well most of the time. I can talk properly with the doctor, and I don't feel like I am missing anything compared to a normal visit.

Subhi, Female, 36 years

Financial efficiency is reflected in the cost savings reported by beneficiaries. A majority indicated saving meaningful amounts per visit, with 37% reporting savings of ₹151–300 and 26% reporting savings of more than ₹300. Even those saving smaller amounts still benefited from reduced travel expenses and lower opportunity costs.

For households that previously relied on private clinics or distant hospitals, these savings represent more than just convenience, they ease financial pressure and make regular care more affordable.



While the overall efficiency of the telemedicine programme is strong, the findings also point to areas that need attention. A small proportion of beneficiaries reported that the service does not save time for them, and some found the process a bit confusing. These responses suggest that efficiency gains are not uniform across all users and may vary based on individual familiarity with digital systems, centre-level support, and local connectivity conditions.

For first-time users, elderly beneficiaries, or those less comfortable with technology, even a simple digital workflow can initially feel unfamiliar or slow.

This was also echoed by the HCL Foundation team, who shared that many people were hesitant and uncomfortable with the system during their first visit. However, after one or two visits, most beneficiaries became more confident and even began to prefer telemedicine over traditional care options. This learning curve highlights the importance of continued hand-holding and patient

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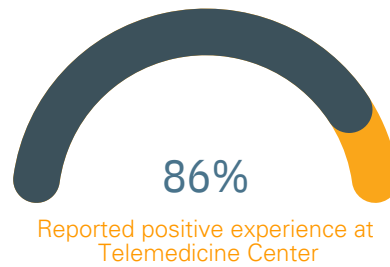
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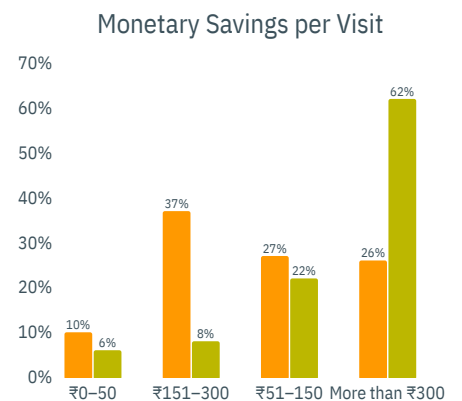


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orientation, especially for new users, to ensure that efficiency benefits are experienced more consistently across all user groups.

Coherence

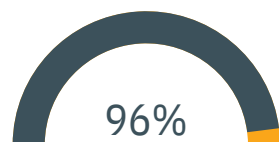
The telemedicine programme demonstrates strong coherence with both the existing public healthcare system and broader national health priorities. By operating within Health and Wellness Centres, the intervention complements government efforts to strengthen primary healthcare delivery rather than creating a parallel system. The integration of tele-consultations into routine centre workflows alongside in-person services, diagnostics, and medicine distribution ensures that telemedicine functions as an extension of existing care pathways.

At a policy level, the programme is well aligned with national initiatives such as the Telemedicine Practice Guidelines and the broader push towards digital health under government programmes. It supports the national objective of improving access to specialist care in underserved areas and addresses long-standing rural urban healthcare gaps.

Impact

Reduced Dependence on Higher-Level Hospitals

One of the most significant impacts of the telemedicine programme is the clear shift in how beneficiaries navigate the healthcare system. The findings show that telemedicine is no longer being used only as a supplementary service, but increasingly as a first point of care. A large majority of beneficiaries reported a reduction in their need to visit other hospitals, with 65% stating that this need has reduced significantly and another 31% reporting a reduction to some extent. Only a very small proportion reported no change.



reported telemedicine reduced the need to go to other hospitals

This shift is important because it indicates a change in treatment pathways rather than only improved service access. By resolving a large

share of health concerns at the primary level, telemedicine is reducing pressure on district hospitals and private facilities and strengthening the role of Health and Wellness Centres as effective points of care. This pattern aligns with national health system goals that emphasise decentralisation of care and improved case management at the primary level.

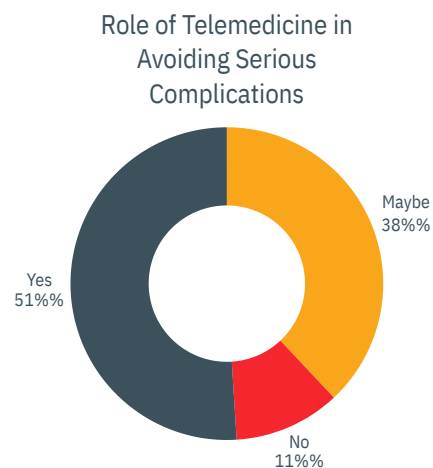
A government audit of district hospitals in Uttar Pradesh found that in 2017–18, daily outpatient registrations in some hospitals reached nearly **800 patients per day**, compared to an average of about 460 patients across audited hospitals.

The reduction in travel and hospital visits is also reflected in the benefits reported by beneficiaries. 54% experienced less travel and 60% reported lower spending on travel. These changes indicate a reduction in the economic and time burdens traditionally associated with healthcare seeking in rural areas.

Early Detection and Risk Reduction

A second critical area of impact relates to early detection and prevention of complications. More than half of the beneficiaries (52%) identified early detection of illness as a key benefit of telemedicine, and 51% reported that the service has helped them avoid more serious complications through early treatment.

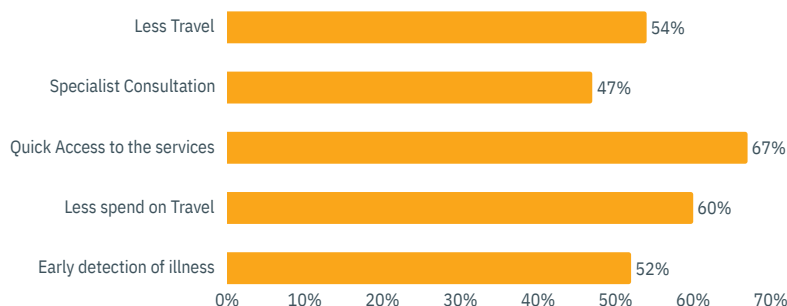
Importantly, a large share of beneficiaries responded “yes” when asked if the telemedicine has helped them avoid serious health condition, while some were “unsure”. This response suggests that telemedicine is helping people seek care earlier than before, even if they are not yet fully certain about the long-term health outcomes.



In rural settings, where people often delay treatment until symptoms become severe, this shift towards earlier consultation itself represents a meaningful change in care-seeking behaviour. Rather than waiting for illness to worsen, beneficiaries are now more likely to consult a doctor at the onset of symptoms.

This pattern indicates that telemedicine is changing the timing of care, which is a critical determinant of long-term health outcomes. By encouraging earlier diagnosis and timely intervention, the programme is laying the foundation for reduced complications, fewer hospitalisations, and better management of chronic and recurrent conditions over time.

Benefits Experienced through Telemedicine



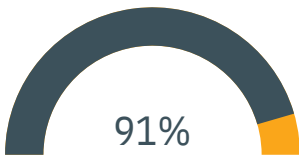


A lot of patients now come from different Gram Panchayats, even 20 to 30 kilometres away. Earlier, they had to go to the district hospital or town for treatment. Now they come here because they trust this centre and know they will get proper advice and medicines here itself.

Telemedicine Staff, Gaurikhalsa Gram Panchayat

Sustainability

The strongest indicator of sustainability emerges from beneficiaries' stated intention to continue using the service. Sustained utilisation is not driven by infrastructure alone, but by perceived value, trust in the service, and satisfaction with outcomes.



91% reported to continue use Telemedicine in the Future

High willingness to return suggests that telemedicine is becoming embedded in routine healthcare behaviour. In rural contexts, where new service models often face resistance or drop-off after initial use, such a high level of intended repeat use indicates a strong foundation for long-term adoption. The beneficiaries see telemedicine not as a temporary alternative, but as a dependable part of their regular care-seeking pathway.



SGS team interacting with patients

Emerging Limits of the Model

The suggestions shared by beneficiaries also highlight the natural operational limits of a telemedicine-based model and point to areas where expectations begin to extend beyond what remote care can fully provide.

From an analytical perspective, these concerns do not reflect dissatisfaction with the telemedicine concept itself, but rather the inherent boundaries of remote healthcare. While specialist consultations are already being provided through the platform, some beneficiaries indicated a need for access to a wider range of specialists or more frequent specialist availability. This likely reflects the fact that certain complex or critical cases require physical examination, detailed investigations, or in-person procedures, which cannot be fully addressed through tele-consultation alone. In such situations, telemedicine can support early diagnosis and referral, but cannot replace higher-level clinical care.

Similarly, requests for better network quality point to the dependence of digital healthcare on stable connectivity. Even minor disruptions can affect consultation quality and patient confidence, especially for those who are new to the system.

The demand for greater medicine availability reflects expectations that once consultation is accessible locally, treatment should also be completed locally to the extent possible.

Viewed through a sustainability lens, these suggestions are best understood not as shortcomings of implementation, but as indicators of growing reliance on the service and rising expectations. As beneficiaries begin to treat telemedicine as a core healthcare option, they naturally expect broader specialist coverage, stronger digital reliability, and more comprehensive service completion at the centre.

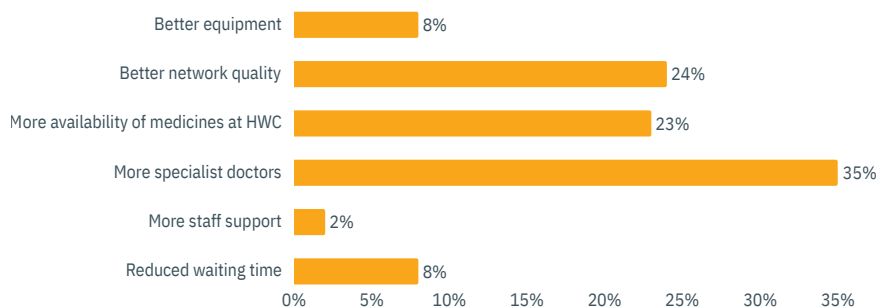
Addressing these emerging limits through selective strengthening while maintaining clear referral pathways for complex cases will be important for sustaining trust and long-term utilisation.

Many beneficiaries reported coming to the centre after hearing positive experiences from neighbours or relatives, indicating growing community trust and organic adoption of telemedicine services.



Medicine stock at telemedicine centre

Suggestions to improve The telemedicine centres



Social Return on Investment

The SROI analysis was undertaken to estimate the social value generated by the telemedicine programme in relation to the financial investment made by HCL Foundation. Given the open-access nature of telemedicine services and the availability of primary outcome data from beneficiary surveys, **an outcome-based, survey-extrapolated SROI approach** was adopted.

Outcome incidence rates were derived from the survey of 186 beneficiaries and extrapolated to the estimated annual beneficiary base across 13 centres. This approach ensures that social value is estimated based on measured outcomes, rather than assuming uniform benefits for all users.

Based on service utilization patterns observed across centres:

- Average consultations per day per center = 30
- Centres = 13
- Operational days per year = 260

Total annual consultations = $30 \times 260 \times 13 = 1,01,400$

TABLE 3 Outcome Incidence

Outcome	% of Beneficiaries Experiencing Outcome	Number of Consultations Experiencing Outcome
Travel cost saved	60%	60,840
Time saved / quick access	67%	67,938
Reduced hospital visits	96%	97,344
Avoided serious complications	51%	51,714

TABLE 4 Financial Proxies

Outcome	Proxy Value (₹)	Reference
Travel cost saved per visit	200	NSS 75th Round, MOSPI (2017–18)
Wage loss avoided (time saved)	150	Periodic Labour Force Survey, Govt. of India
Cost of avoided hospital visit	500	NSS 75th Round, MOSPI
Cost of avoided complication	3,000	Ayushman Bharat Package Rates, MoHFW

To ensure that the SROI estimates reflect only the net value created by the telemedicine programme, standard adjustments were applied to all outcomes.

A **deadweight of 20%** was assumed to account for improvements that may have occurred even without the intervention.

Attribution to other factors was set at 30%, recognising the role of personal behaviour, family support, and existing health services in influencing outcomes.

As the analysis estimates social value over a single year, **no drop-off** was applied.

Net Adjustment Factor = $(1 - \text{Deadweight}) \times (1 - \text{Attribution to others}) = 0.80 \times 0.70 = 0.56$

TABLE 6 Outcome-wise Social Value

Outcome	Consultations Experiencing Outcome	Financial Proxy (₹)	Gross Social Value (₹)	Net Social Value after Adjustments (₹)
Travel cost saved	60,840	200	12,168,000	6,814,080
Time saved / quick access	67,938	150	10,190,700	5,706,792
Reduced hospital visits	97,344	500	48,672,000	27,256,320
Avoided serious complications	51,714	3,000	155,142,000	86,879,520
Total				₹12,66,56,712

SROI = ₹12,66,56,712 / ₹4,22,68,759

SROI Ratio = 3 : 1

Key learnings & Recommendations

Strengthen specialist availability and clinical triage for complex cases.

While telemedicine performs well for routine and follow-up care, some critical and complex conditions still require deeper clinical assessment. Introducing periodic specialist clinics, clearer triage protocols, and faster referral pathways to higher facilities can strengthen clinical depth and improve outcomes for high-risk patients.

Improve connectivity reliability and equipment uptime.

Occasional network disruptions and equipment issues affect consultation quality and continuity of care. Regular preventive maintenance, backup internet connections, and rapid-response technical support systems should be institutionalised to ensure consistent service delivery across all centres.

Leverage community platforms to strengthen outreach and sustained utilisation.

Word of mouth has emerged as a strong driver of demand. Formalising outreach through ASHAs, ANMs, self-help groups, and Panchayat platforms can expand reach, improve awareness, and ensure that underserved households are aware of and able to use the service.

Enhance availability of essential medicines at centre level.

Limited availability of commonly prescribed medicines reduces the completeness of care and increases out-of-pocket spending outside the centre. Strengthening medicine stocking systems and aligning drug supply with prescription patterns will improve treatment adherence and patient satisfaction.



Beneficiary at Telemedicine centre

Case Study

During a field visit, the SGS assessment team observed a live teleconsultation and interacted with a specialist doctor connected from a tertiary facility.

The doctor shared an example of a patient who had presented at the telemedicine centre with persistent and unusual skin issues that had not responded to routine treatment over several months. The symptoms were uncommon, and earlier consultations at local facilities had not resulted in a clear diagnosis.

Through the telemedicine platform, the doctor was able to conduct a detailed visual examination, review the patient's history, and identify the condition as a rare dermatological disorder - Darier's disease.

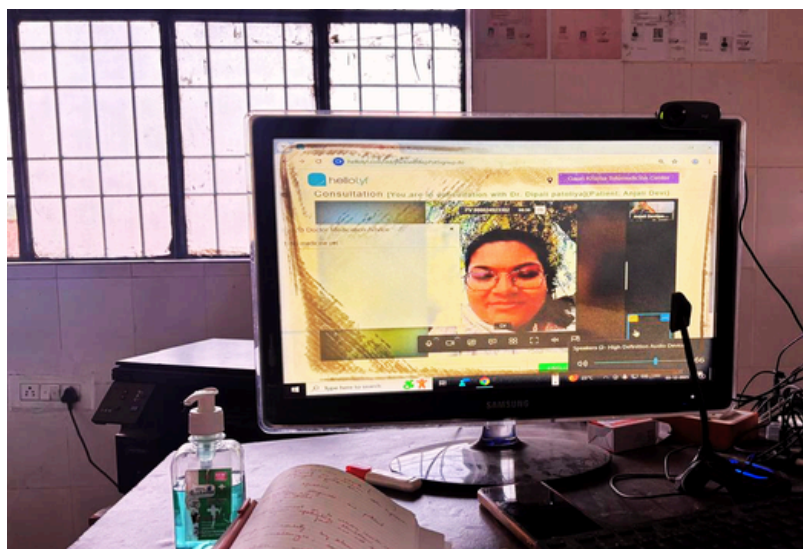
The doctor explained that without timely specialist input, such cases often remain misdiagnosed or untreated for long periods, leading to worsening symptoms and significant distress for patients.

Following the teleconsultation, appropriate medication and follow-up advice were provided. The doctor noted that the telemedicine platform made it possible to reach a patient in a remote location who would otherwise have had to travel long distances to access specialist dermatology care.

This case illustrates how telemedicine can play a critical role in early diagnosis of rare conditions, improving clinical outcomes and reducing delays in appropriate treatment.

Darier's Disease

A genetic skin condition that is often difficult to diagnose at the primary care level.



Live consultation with Doctor

Case Study

Mr. Ramesh (name changed), a 48-year-old agricultural worker, arrived at the telemedicine centre with severe back pain that had developed suddenly over the past few days. The pain was so intense that he was unable to sit properly or continue his daily work in the fields. Every movement caused discomfort, and he feared that the condition might worsen if left untreated. Before coming to the telemedicine centre, Mr. Ramesh had considered travelling to a district hospital nearly 40 kilometres away. However, the cost of travel, loss of a day's wages, and long waiting times discouraged him from making the journey. On the advice of a neighbour, he decided to visit the local telemedicine centre instead.

At the centre, the staff connected him to an orthopaedic specialist based in Kolkata through the telemedicine platform. The doctor patiently listened to his symptoms, asked detailed questions about his work routine and previous injuries, and guided him through simple movements to assess the source of pain. Based on the consultation, the doctor diagnosed the condition as acute muscular strain rather than a serious spinal injury.

The doctor prescribed medication for pain and inflammation, advised specific posture corrections and stretching exercises, and explained how to avoid movements that could worsen the condition. Mr. Ramesh was reassured that surgery or hospital admission was not required at this stage, but that follow-up would be important if symptoms persisted.

Within a few days, his pain reduced significantly, and he was able to resume his daily activities. Reflecting on his experience, he shared that without the telemedicine service, he would have delayed treatment or spent a large amount of money seeking care in the town.

This case highlights how timely access to a specialist through telemedicine can prevent unnecessary travel, reduce economic burden, and enable quick recovery for patients suffering from acute but manageable conditions.



Annexure



When you need to be sure

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