Ministry of Health & Family Welfare
Government of India

Utilization of
TELEMEDICINE / e-SANJEEVANI
in the Public Health Facilities of India

2025

Utilization of **Telemedicine / e-Sanjeevani** in the **Public Health Facilities of India**

2025

Knowledge Management Division

National Health Systems Resource Centre (NHSRC)

Ministry of Health and Family Welfare

Table of Content

List of Boxes

List of Figures

List of Tables

Introduction and Methodology

01

1.1 About Telemedicine and its Functions

Over the years, the Government of India has undertaken various initiatives to improve the accessibility of healthcare services for its population. These efforts have primarily focused on developing and strengthening the health infrastructure at all levels. As part of this endeavour, the Government of India launched the Ayushman Bharat programme, reinforcing and upgrading Sub-Health Centres (SHCs) and Primary Health Centres (PHCs) into Ayushman Arogya Mandir (AAM) to provide comprehensive primary healthcare in both rural and urban areas.[1] The erstwhile "Health and Wellness Centres" were rebranded by the Central Government as "Ayushman Arogya Mandir" with the tagline **"Arogyam Parmam Dhanam"**

AAM are envisaged to deliver an expanded range of services that go beyond Maternal and Child Healthcare and Communicable Diseases to include care for Non- Communicable Diseases, palliative and rehabilitative care, oral, eye, and ENT care, mental health services, and first-level care for emergencies and trauma, including free essential drugs and diagnostic services. The Ministry of Health and Family Welfare (MoHFW) leveraged digital technology to improve community access to these healthcare services with the inclusion of telemedicine services in AAM. Telehealth facilitates access to higher levels of care, by ensuring equitable, efficient, and effective healthcare delivery. The National Telemedicine initiative, e-Sanjeevani, enables healthcare providers to diagnose and treat patients in geographically diverse locations. During the COVID-19 pandemic and the subsequent lockdowns, there was reduced access to regular healthcare services. The Government of India utilized telemedicine to mitigate this situation, enabling patients to connect with doctors from the comfort of their homes. This measure effectively contained the spread of COVID by ensuring physical distancing while simultaneously providing access to non-COVID essential healthcare. Mainstreaming of telemedicine in health systems, particularly at the primary level, is viewed as a promising approach to improve patient outcomes.[2]

The Government of India has recognized that telemedicine is a vital facilitator for providing timely care and for improving access to healthcare services. Telemedicine is defined as "the delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities" (Telemedicine Practice Guidelines, Government of India, 2020). Telemedicine services offer several advantages, with benefits including a reduction in travel-related expenditure and increased access to specialist care,

1 https://www.mohfw.gov.in/pdf/Telemedicine.pdf

2 Reports | Ayushman Bharat - Health and Wellness Centre (nhp.gov.in)

particularly for rural patients. They no longer need to travel long distances for consultation and treatment, nor do they have to endure prolonged waiting times in hospital queues. Despite these advantages, telemedicine faces some challenges, including a shortage of doctors and specialists and limited awareness and accessibility of telemedicine services among the general population especially in rural areas.

1.2 Basic Structure of Telemedicine in India

The Telemedicine initiative was undertaken by the MoHFW to improve the efficiency and efficacy of the public healthcare system by using Information and Communication Technology (ICT) innovations. As part of this initiative, the MoHFW is implementing a green field project on e-Health with the National Medical College Network (NMCN) for interlinking Medical Colleges across the country with the purpose of e-Education and the National Rural Telemedicine Network for e-Healthcare delivery. Currently, 154 Medical Colleges have been interlinked in the NMCN.

The MoHFW released the "Guidelines for Telemedicine Services in Ayushman Bharat Scheme" in 2019, to provide a framework for the successful roll-out of telemedicine services in AAM. The National Teleconsultation Service, e-Sanjeevani was launched in 2019 and has since shaped into the largest government-owned telemedicine system in the world. This service supports two types of online consultation with general physicians and medical specialists, these are Doctor-to-Doctor (e-Sanjeevani AB-AAM) and Patient-to- Doctor (e-Sanjeevani OPD) Tele-consultations. This service provision is based on 'Hub and Spoke Model' of service where AAM act as spokes and a HUB of Doctors (MBBS/ Speciality/ Super-Speciality doctors) is created at State Level or Zonal level, as the case may be, to provide the first level of teleconsultation. The teleconsultation service enables beneficiaries to connect virtually with doctors or specialists from the HUB through videoconferencing. This process is facilitated by a Mid-Level Health Providers (MLHPs) or Community Health Workers (CHOs) at the SPOKE level. The e-Prescription generated during the consultation and the prescribed medications are made available through the AAM pharmacy. This provision has greatly facilitated the delivery of general and specialty healthcare services in underserved areas.

The Medical Council of India (MCI) and NITI Aayog jointly released the Telemedicine Practice Guidelines on 25 March 2020, allowing Registered Medical Practitioners to provide healthcare consultations remotely through digital platforms. The basic framework of e-Sanjeevani OPD consultation is shown in Figure 1.

Figure 1: Basic Framework for e-Sanjeevani OPD consultation

Source: https://e-Sanjeevani.mohfw.gov.in/#/

1.3 Teleconsultation at State-level

The State Telemedicine Network (STN) plan was approved with the goal of upgrading existing state government healthcare facilities in states to provide telemedicine services in rural areas. To create a reliable, ubiquitous and high-speed network backbone, all available and future network technologies such as National Knowledge Network (NKN), National Optic Fibre Network (NOFN), SATCOM (Satellite Communication) and terrestrial high- speed internet is being utilized. e-Sanjeevani is operational in 31 States/ Union Territories across the country. The MoHFW's press release on 16th February 2023 reported that e-Sanjeevani has facilitated over 10 crore teleconsultations since its inception, reaching this milestone by January 2023. Some states offer services on a daily basis, while few states go a step beyond to provide round-the-clock services. The leading states in terms of adoption of e-Sanjeevani, were Andhra Pradesh (3,17,01,735), Tamil Nadu (1,23,74,281), West Bengal (1,23,11,019), Karnataka (1,12,93,228), Uttar Pradesh (54,98,907), Maharashtra (47,80,259), Telangana (45,91,028), Madhya Pradesh (40,15,879), Bihar (32,20,415), Gujarat (29,88,201), and Assam (10,66,556).[3]

1.4 Rationale of the Study

The purpose of the current study was to evaluate the utilization of e-Sanjeevani services at the HUB and SPOKE levels of public health institutions and examine factors that facilitate the utilization of telemedicine services in six states. By gathering perspectives from healthcare providers/facilitators, users, and non-users, the study aimed to gain insights into the state of e-Sanjeevani services in India, including the features that encourage their usage and the obstacles faced. The findings of this research will assist the government in prioritizing the level of service for e-Sanjeevani services. The study was conducted in six states, with one district from each state representing six regions of India, and the report provides a summary of the findings.

1.5 Scope of the Study

- Understanding the extent of utilization of e-Sanjeevani services and its sustainability in India.
- Enumerating the association of factors related to the provision and utilization of telemedicine.
- Documenting the perceptions and perceived barriers among healthcare providers/ facilitators, users and non-users regarding telemedicine.

1.6 Study Objectives

The specific objectives of the study were:

1. To assess the knowledge and perceptions of the healthcare providers/ facilitators and seekers along with the estimation of the utilization of telemedicine/ teleconsultation (e-Sanjeevani)

3 Ministry of Health and Family Welfare, 13 February 2023 (https://pib.gov.in/PressReleasePage.aspx?PRID=1899855)

2. To evaluate the associated factors affecting the provision and utilization of telemedicine

Potential benefits of the study: The findings and recommendations from this study would generate evidence for stakeholders to inform policy decisions at both the national and state levels.

1.7 Research Design

To assess the state of e-Sanjeevani in public health facilities in India, this implementation research applied a cross-sectional design and utilized mixed-method approach. In-depth interviews (IDIs) and structured interviews with healthcare providers/ facilitators, users and non-users were undertaken to evaluate the factors affecting the provision and utilization of e-Sanjeevani.

1.8 Sampling Procedure

1.8.1 Sampling Method

The states, districts and healthcare facilities were selected using multi-stage random sampling method.

1.8.2 Study Setting

States were selected from different zones of the country (North, South, Central, West, East, and North-East), to include a diverse and representative sample that covers various geographical areas. One district was selected in consultation with each state, and the study focused on healthcare facilities (AAM-SCs, AAM-PHCs, and DH/MCs) serving rural areas.

Box 1: States selected under each zone of the country for the study

Sr. No	Zone	State selected	District selected
1	North	Uttarakhand	Dehradun
2	South	Karnataka	Mandya
3	Central	Madhya Pradesh	Sehore
4	West	Gujarat	Rajkot
5	East	West Bengal	Purba Bardhaman
6	North-East	Tripura	West Tripura

The selection of the states, districts, and facilities was as follows:

1. The states were selected zone wise to achieve geographical representation and to increase the generalizability of the study findings. (Box 1)
2. One district was selected from each state based on the criterion of having the highest

number of consultations. A total of six districts were included in the study. (Box 1)

3. The study covered telemedicine infrastructure consisting of one HUB, 5 AAM-PHCs, and 5 AAM-SCs in each of the six districts. This means that a total of 11 healthcare facilities per district were included, comprising 6 HUBs, 30 AAM-PHCs, and 30 AAM- SHCs. The study covered a total of 66 healthcare facilities.

Table 1: State-wise sample distribution for the study

Sr. No	States	Quantitative		Qualitative		Total
		SIP	SIB	IDI-P	IDI-B	
1.	Gujarat	33	337	21	14	405
2.	Karnataka	40	330	37	24	431
3.	Madhya Pradesh	44	330	27	24	425
4.	Tripura	36	330	40	24	430
5.	Uttarakhand	41	330	35	22	428
6.	West Bengal	38	330	36	24	428
	Total	232	1987	196	132	2547

SIP - Structured interview with Provider (Kobo tool), SIB - Structured Interview with Beneficiary (Kobo tool), IDIP - IDI with Provider, IDIB - IDI with Beneficiary

1.8.3 Selection of the healthcare providers/facilitators

The study aimed to carry out a total of 45 structured interviews and 22 in-depth interviews per district, on healthcare providers/facilitators. This would have resulted in 270 structured interviews and 132 in-depth interviews across all districts. However, in practice, the study managed to conduct interviews with 232 healthcare providers/facilitators from 66 healthcare facilities. This included 36 healthcare providers/facilitators from the 6 HUBs and 196 from the 60 SPOKEs.

Quantitative component

In total, the study interviewed 232 healthcare providers/ facilitators and 1987 OPD beneficiaries (991 users and 996 non-users) as illustrated in Table 2.

Qualitative component

A total of 328 In-depth interviews (IDIs) were conducted and categorized based on the type of facility, as shown in Table 2. The study included IDIs with healthcare providers i.e., Medical Officers and Specialists and healthcare facilitators i.e., Community Health Officers (CHOs), ANM and ASHAs. Additionally, IDIs were conducted with 66 users and 66 non- users.

Table 2: Facility-wise Sample Distribution of Beneficiaries & Healthcare Providers and Facilitators (Quantitative)

Quantitative					
Facility level	**User**	**Non-User**	**Healthcare Provider**	**Facilitators**	**Total**
DH/MC	86	95	29	-	**210**
AAM-PHC	463	455	7	131	**1056**
AAM-SC	442	446	-	65	**953**
Total	**991**	**996**	**36**	**196**	**2219**
Qualitative					
DH/MC	11	12	12		**35**
AAM-PHC	28	27	87		**142**
AAM-SC	27	27	97		**151**
Total	**66**	**66**	**196**		**328**

Users/ Non-users

The study conducted interviews with beneficiaries of public health facilities, including MC/ DH/AAM-PHC/AAM-SC, who had used e-Sanjeevani services, as well as those who had not utilized them. Accordingly, two separate sampling frameworks were employed to select the required sample: one for e-Sanjeevani users and another for non-users. In total, 1,987 participants were enrolled in the study, with 991 being e-Sanjeevani users and 996 being non-users. Among the users, the study included both individuals seeking consultations for the first time and those returning for follow-up care.

1.9 Study Tools

1.9.1 Quantitative tools

The quantitative part of the study utilized a Computer-Assisted Personal Interview (CAPI) method, for conducting face-to-face interviews with patients in the outpatient department (OPD) waiting area. Three separate structured interview guides were used for data collection from Healthcare Providers/Facilitators, e-Sanjeevani users, and non-users.

Healthcare Providers/ Facilitators' Tool elicited general information related to their age, gender, and designation. Additionally, it gathered information on teleconsultation exposure in terms of training and time spent providing teleconsultation services, available telemedicine infrastructure - space, timings, data storage, consultation mode, type of disease, preferred treatment mode, and challenges in the delivery of telemedicine services.

Users' Tool gathered general information related to their age, gender, education, employment

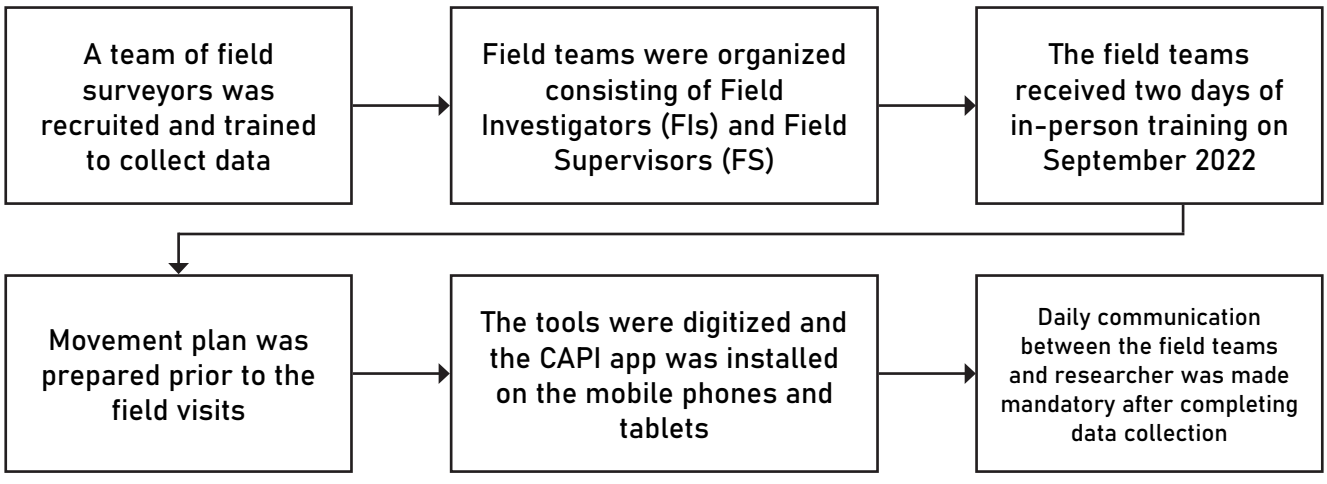
status and household income. It also included information on access to public health facilities, the users' teleconsultation experience, expenses incurred while availing services, time spent on the teleconsultation visit, awareness level, ease of use, details related to utilization, satisfaction levels, and willingness to recommend the service to others. Details related to the prescription and availability of drugs and diagnostics were also elicited.

Non-users' Tool obtained general information related to their age, gender, education, employment status and household income. It also elicited details pertaining to access to the public health facilities, expenses incurred while availing services, time spent per visit to the hospital, expenses incurred while availing services and reasons for non-utilization of e-Sanjeevani services.

1.9.2 Qualitative tools

In-depth interviews (IDIs) were also planned in addition to structured interviews, to gain a deeper understanding of the status of teleconsultation services from healthcare providers/facilitators, users, and non-users. The IDIs conducted with healthcare providers, including Medical Officers, Specialists, and facilitators like CHOs, covered questions related to their training and orientation on teleconsultation, their experiences with teleconsultation, challenges faced in service provision, and suggestions to enhance telemedicine services in the district. The IDIs with frontline functionaries, like ANMs and ASHAs, captured information related to their knowledge, awareness, outreach activities, and community perception of telemedicine services in their areas. The IDIs with users and non-users attempted to capture information on the barriers and facilitators of telemedicine and to explore potential ways of improving the utilization of e-Sanjeevani services. All of the tools and checklists were piloted and then translated into the regional languages before administration.

1.10 Preparation of the field team



The training topics covered respondent selection, content of the structured and in-depth interviews and procedure of conducting interviews among healthcare providers/facilitators, users and non-users. The Field Investigators (FIs) and Field Supervisors (FS) were trained to obtain consent from respondents before starting the interview. The field team was briefed on their roles and responsibilities. Uncertainties were clarified, and discussions were encouraged between the FIs and FS and the researchers.

1.11 Data Collection

Data were collected per facility for predefined indicators using tools for healthcare providers/ facilitators, e-Sanjeevani users, and non-users. The users were tracked through the facilities, while non-users were visited in their households within the same community. Data collection was conducted on a first-come, first-served basis to achieve the targeted sample size.

IDIs were conducted with selected participants to explore the factors affecting or influencing the provision and utilization of telemedicine at healthcare facilities. The healthcare facilitator/ provider selection followed a sequence starting with ASHA/ANM, followed by CHO, MO and Specialists. The purpose of conducting these IDIs was to complement the quantitative findings from structured interviews and to gain insights into the factors contributing to the utilization of e-Sanjeevani services.

1.12 Quality Assurance Mechanisms

- The CAPI-based questionnaire was programmed with built-in checks for errors such as missing fields, skip errors, and invalid ranges.
- The FIs carefully reviewed the questionnaire before leaving the interview site, ensuring that it was filled correctly and without any missing information.
- The FIs/FS obtained consent from the health facilities to administer the questionnaire to OPD patients and providers.
- Prior to conducting home visits, appointments were scheduled with the respondents.
- The data collection process was closely monitored by Senior Researchers and Quality Assurance Monitors. They observed at least 20 of the total interviews directly or by checking them on the spot, and 10 of the interviews were verified later by the Quality Assurance Monitor. The data were uploaded to the server at the end of each day for review by the research team.

1.13 Data Management

The quantitative data analysis was done using licensed SPSS software. The analyst provided the research team with initial data feedback, and necessary corrective actions were taken in response. Feedback on data quality was given to the teams every fourth day after the study's commencement. Qualitative data analysis utilized a grounded analysis approach and was conducted manually.

Data protection protocols: To ensure a high level of data security during data collection, transfer, and storage, data protection protocols were implemented. These included the use of protective measures on data collection devices, regular data backups, and the use of antivirus and anti-spyware software to safeguard devices and data.

1.14 Ethical Consideration

Verbal and written consent was obtained from all the study participants. All standard norms and established practices were diligently followed as described below:

Informed consent: The study ensured that all study participants provided informed consent.

Appointments were scheduled prior to data collection to obtain consent from respondents. Permission was obtained from the relevant authorities and stakeholders before commencing data collection.

Confidentiality: The participants were informed that the information they provided during the interviews would be kept strictly confidential and only used for research purposes. It was emphasized that no personal identifiers would be used in the report or in the dissemination of study findings.

Utilization of e-Sanjeevani Services: Perspectives of Healthcare Providers/ Facilitators, Users and Non-users

02

This section is divided into 3 major sub-sections. The first section presents the perspective of healthcare providers/facilitators who had been providing teleconsultation services to understand the challenges and enabling factors with the Telemedicine services. In the subsequent two sections, the perspective of e-Sanjeevani users and non-users are described to get insights into the reach and utilization of telemedicine.

2.1 Healthcare Providers/Facilitators of e-Sanjeevani

2.1.1 Socio-Demographic Details

In accordance with the "Guidelines for Telemedicine Services in Ayushman Bharat Health and Wellness Centers," the telemedicine services are organized as follows: Midlevel health practitioners (MLHPs) play a pivotal role in enabling telemedicine services at the subcentre level while, MBBS doctors take charge of facilitating teleconsultations with specialists and super-specialists at the HUB centres.

A total of 232 healthcare providers and facilitators were interviewed across the six states. Among the participants, 15.5% were healthcare providers, which included MBBS Doctors, Specialists, and Super-specialists responsible for offering teleconsultation services at AAM-PHCs, District Hospitals and Medical Colleges. The remaining 84.5% comprised facilitators (MLHPs), who played a crucial role in Assisted Telemedicine by enabling the teleconsultation process. As per the CPHC guidelines, an MLHP can hold qualifications such as a BSc. in Community Health, be a registered nurse (GNM or B.SC), or an Ayurveda practitioner.

MBBS doctors played a role in facilitating teleconsultation at the AAM-PHCs. Facilitators at the AAM-SC and AAM-PHC comprised a diverse group of MLHPs including AYUSH and Homeopathic Medical Officers, Community Health Officers (CHOs) and Staff Nurses. It was reported that Auxiliary Nurse Midwives (ANMs), ASHAs, Anganwadi Workers (AWWs), Health Assistants, Lab Technicians, Pharmacists, Data Entry Operators, and Yoga teachers also participated in facilitating the teleconsultation process at some centres, even though this provision is not outlined in the official guidelines. The distribution of healthcare providers/ facilitators across the states has been displayed in the table below. (Table 3)

Table 3: Distribution of Healthcare Providers/ Facilitators across the states

States		Healthcare Provider		Healthcare Facilitator		Total	
		n	%	n	%	n	%
Gujarat	AAM-SC	0	0	10	30.3	10	30.3
	AAM-PHC	0	0	19	57.6	19	57.6
	DH/MC	4	12.1	0	0	4	12.1
	Total	4	12.1	29	87.9	33	100
West Bengal	AAM-SC	0	0	14	36.8	14	36.8
	AAM-PHC	0	0	20	52.6	20	52.6
	DH/MC	4	10.5	0	0	4	10.6
	Total	4	10.5	34	89.5	38	100
Uttarakhand	AAM-SC	0	0	9	21.4	9	21.4
	AAM-PHC	0	0	27	64.3	27	64.3
	DH/MC	6	14.3	0	0	6	14.3
	Total	6	14.3	36	85.7	42	100
Karnataka	AAM-SC	0	0	8	20.0	8	20.0
	AAM-PHC	7	17.5	19	47.5	26	65
	DH/MC	6	15	0	0	6	15
	Total	13	32.5	27	67.5	40	100
Madhya Pradesh	AAM-SC	0	0	15	34.1	15	34.1
	AAM-PHC	0	0	24	54.5	24	54.5
	DH/MC	5	11.4	0	0	5	11.4
	Total	5	11.4	39	88.6	44	100

States		Healthcare Provider		Healthcare Facilitator		Total	
		n	%	n	%	n	%
Tripura	AAM-SC	0	0	9	25.7	9	25.7
	AAM-PHC	0	0	22	62.9	22	62.9
	DH/MC	4	11.4	0	0	4	11.4
	Total	4	11.4	31	88.6	35	100
India	AAM-SC	0	0	65	28	65	28
	AAM-PHC	7	3	131	56.5	138	59.5
	DH/MC	29	12.5	0	0	29	12.5
	Total	36	15.5	196	84.5	232	100

There was a higher preponderance of females (58.2%) among the Healthcare Providers/ Facilitators due to the larger representation of ASHAs, ANMs, Staff Nurses, and AWWs who were involved in facilitating teleconsultation at the healthcare facilities (Table 4). The mean age of the HCPs/facilitators was 36 years and there was a wide variation in terms of the age groups they belonged to. A higher proportion of HCPs/facilitators aged between 31-40 years (40.5%) while those aged above 51 years constituted a smaller fraction (11.2%).

Table 4: Demographic Characteristics of the Healthcare Providers/ Facilitators

Variables	Categories	Healthcare providers/facilitators	
		n	%
Age	20-30 years	71	30.6
	31-40 years	94	40.5
	41-50 years	41	17.7
	> 51 years	26	11.2
Gender	Male	97	41.8
	Female	135	58.2

2.1.2 Teleconsultation Infrastructure and Support

Provision of high-volume teleconsultation services requires appropriate infrastructure including high-speed internet connectivity and camera and microphone enabled devices. The

"Guidelines for Telemedicine services in Ayushman Bharat Health and Wellness Centres" has specified the minimum requirements that are to be in place at the HUB and SPOKES. This essential infrastructure includes a Telemedicine Diagnostic Kit, a desktop computer with a headphone, microphone, and an HD web camera, along with a printer. In addition, it requires what is known as "Last mile connectivity," which represents the final telecommunications network segment crucial for end-user service delivery. In addition to these components, MBBS doctors and Specialists are expected to be available on a daily scheduled basis at the HUB centres. The availability of the essential infrastructure was assessed in this study.

In general, most healthcare providers/facilitators (61.4%) across the states expressed that the necessary e-Sanjeevani infrastructure was in place. However, considerable differences were observed state-wise, with much higher percentages being recorded in Madhya Pradesh (84.1%), Karnataka (82.5%) and West Bengal (78.9%) in comparison to Uttarakhand (64.3%), Gujarat (27.3%), and Tripura (31.4%). Variations in the implementation stage of the telemedicine initiative among states might be a contributing factor.

At the national level, around 51.8% of the respondents reported that a dedicated space for teleconsultation was available. A significant proportion of the respondents from West Bengal (76.3%), Uttarakhand (69%), and Madhya Pradesh (65.9%) confirmed the availability of a dedicated space for teleconsultation. In contrast a much lower percentage of the healthcare providers/facilitators across Karnataka (27.5%) and Gujarat (12.1%) observed a separate space for telemedicine services.

Across all the states, 75.1% of the HCPs/facilitators confirmed the availability of uninterrupted internet services at the health facilities, with a majority proportion from Karnataka (97.5%), Madhya Pradesh (90.9%) and Uttarakhand (83.3%). The lowest percentage of the participants reporting uninterrupted internet connection belonged to Tripura (37.1%).

As per the analysis, about 62.1% of respondents mentioned having adequate IT support at the facilities for the functioning of e-Sanjeevani. Much higher percentages were recorded across Karnataka (80%), Uttarakhand (78.6%), West Bengal (68.4%) and Madhya Pradesh (65.9%) in comparison to Tripura (40%) and Gujarat (39.4%).

Table 5: Distribution of HCPs/ Facilitators by availability of Infrastructure at health facility (in %)

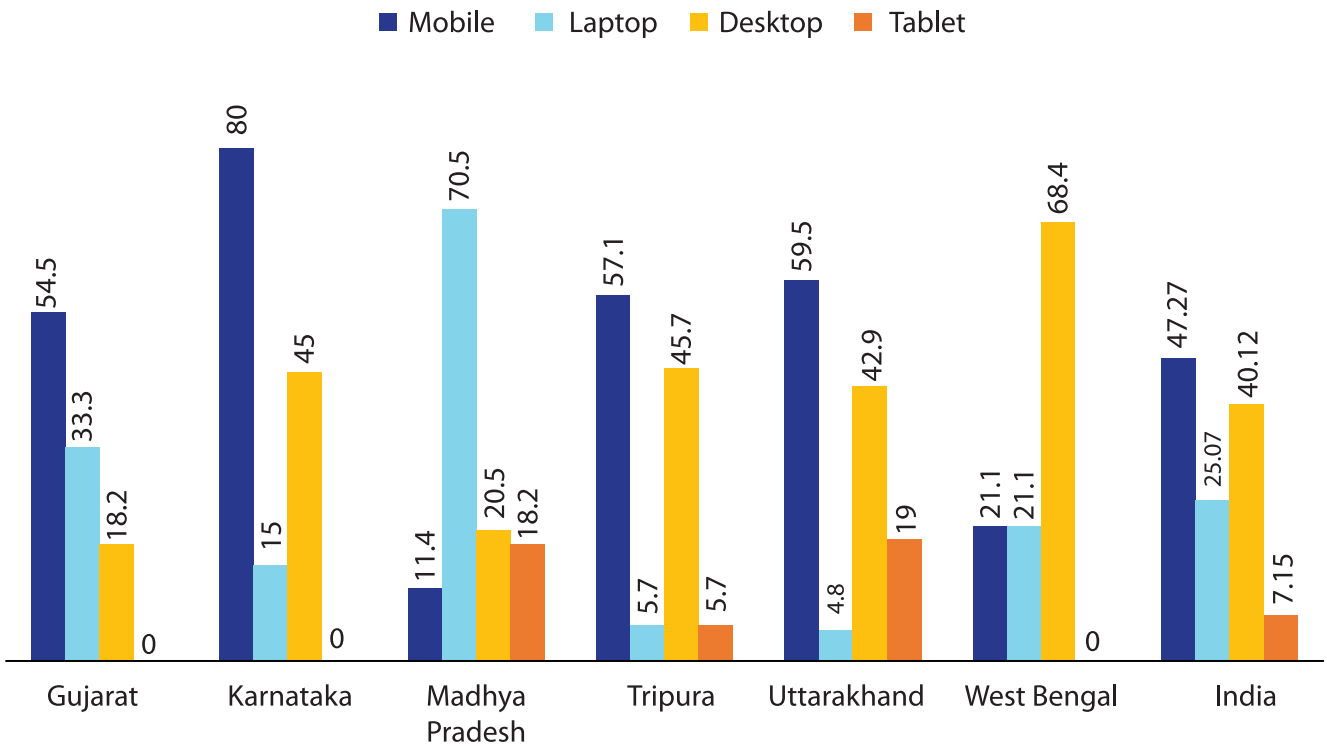
Health facility	Gujarat (GJ)	Karnataka (KA)	Madhya Pradesh (MP)	Tripura (TR)	Uttarakhand (UK)	West Bengal (WB)	India
Availability of basic requirements for teleconsultation at the facility							
AAM-SC	6.1	15	27.3	2.9	11.9	36.8	16.7
AAM-PHC	18.2	60	47.7	17.1	40.5	34.2	36.3
DH/MC	3	7.5	9.1	11.4	11.9	7.9	8.5
Total	**27.3**	**82.5**	**84.1**	**31.4**	**64.3**	**78.9**	**61.4**

Health facility	Gujarat (GJ)	Karnataka (KA)	Madhya Pradesh (MP)	Tripura (TR)	Uttarakhand (UK)	West Bengal (WB)	India
Availability of separate space for teleconsultation							
AAM-SC	0	0	13.6	17.1	4.8	31.6	11.2
AAM-PHC	0	15	40.9	31.4	50	36.8	29.0
DH/MC	12.1	12.5	11.4	11.4	14.3	7.9	11.6
Total	**12.1**	**27.5**	**65.9**	**60**	**69**	**76.3**	**51.8**
Availability of uninterrupted internet connection at the health facility							
AAM-SC	18.2	20	27.3	2.9	16.7	23.7	18.1
AAM-PHC	45.5	65	52.3	22.9	52.4	31.6	45.0
DH/MC	12.1	12.5	11.4	11.4	14.3	10.5	12.0
Total	**75.8**	**97.5**	**90.9**	**37.1**	**83.3**	**65.8**	**75.1**
Availability of IT Support for providing teleconsultation at the facility							
AAM-SC	0	17.5	20.5	11.4	14.3	23.7	14.6
AAM-PHC	33.3	52.5	34.1	17.1	50	34.2	36.9
DH/MC	6.1	10	11.4	11.4	14.3	10.5	10.6
Total	**39.4**	**80**	**65.9**	**40**	**78.6**	**68.4**	**62.1**

The study also assessed the preferred device for conducting telemedicine services at the health facilities to understand the feasibility of use and its availability at the health facilities. Participants in the study indicated employing a mix of devices - Mobile phones, Laptops, Desktops, and Tablets—for their teleconsultation sessions. It was noteworthy that a subset of respondents utilized multiple devices concurrently at the same facility.

As per the results, about 47.3% of the HCPs/facilitators preferred to use their mobile phones for conducting/facilitating teleconsultation services followed by Desktops (40.1%). The majority of the participants preferred using Mobile phones in Karnataka (80%), Uttarakhand (59.5%), Tripura (57.1%) and Gujarat (54.5%). HCPs/facilitators in Madhya Pradesh preferred Laptops (70.5%), while those in West Bengal preferred Desktops (68.4%). Several respondents from Uttarakhand (19%), Madhya Pradesh (18.2%), and Tripura (5.7%) reported that they preferred using Tablets for teleconsultations, while this device was not utilized in Gujarat, Karnataka, and West Bengal. (Figure 2)

Figure 2: Distribution according to the device used for teleconsultation (in %)



** Note: Multiple Response question

2.1.3 Training for delivering teleconsultation services

The effectiveness of telemedicine depends on the practitioners' competence in specific skills, some of which are different from those required for a traditional face-to-face medical system. As listed under telemedicine guidelines, states are required to provide training on telemedicine for healthcare providers and facilitators before teleconsultation practice. This section explores different training aspects, such as whether the respondents were trained on teleconsultation, whether the training was given by Government or Private institutions, funding (independently sponsored or state-sponsored), mode of training (in-person or virtual), and overall satisfaction with the training provided.

More than half of the Healthcare Providers (59%) reported having received proper training, while only 36.5% of facilitators received training. Wide variation was observed across the states, with all the HCPs (100%) in Madhya Pradesh and Tripura having received training while a notably lower proportion of HCPs in Gujarat (25%), Uttarakhand (33.3%) and Karnataka (46.2%) received training.

Almost all healthcare providers (91.7%) were trained by government institutions, while a small proportion of the respondents (8.3%) were trained by private institutions. Telemedicine training was state-sponsored and provided free of cost in almost all the states except West Bengal where half of the HCPs (50%) sponsored their own training. The majority of healthcare providers (72.2%) received in-person training, while only 27.8% opted for virtual training. In Madhya Pradesh, Tripura, and Uttarakhand, all the healthcare providers (100%) received in-person training. In contrast, 100% of the HCPs in Gujarat reported that they received training exclusively in virtual mode. In West Bengal, half of the HCPs (50%) underwent training in

a virtual mode while in Karnataka only a small fraction (16.7%) reported attending training sessions virtually. The satisfaction rates with teleconsultation training varied among the respondents. In Gujarat, Karnataka, and Madhya Pradesh, all the respondents (100%) reported being satisfied with the training provided. Seventy-five percent of HCPs in Tripura, as well as fifty percent of providers from Uttarakhand and West Bengal, expressed satisfaction with the training, deeming it sufficient for fulfilling their roles. (Table 6)

Table 6: Distribution of healthcare providers by training received on teleconsultation

Variables	Health Facility	GJ	KA	MP	TR	UK	WB	India
% of HCPs trained on teleconsultation	AAM-PHC	0	23.1	0	0	0	0	3.9
	DH/MC	25	23.1	100	100	33.3	50	55.2
	Total	25	46.2	100	100	33.3	50	59.1
% of HCPs trained at a government institution	AAM-PHC	0	50	0	0	0	0	8.3
	DH/MC	100	50	100	100	100	50	83.3
	Total	100	100	100	100	100	50	91.7
% of HCPs trained at a private institution	AAM-PHC	0	0	0	0	0	0	0.0
	DH/MC	0	0	0	0	0	50	8.3
	Total	0	0	0	0	0	50	8.3
% of HCPs whose training was independently sponsored	AAM-PHC	0	0	0	0	0	0	0.0
	DH/MC	0	0	0	0	0	50	8.3
	Total	0	0	0	0	0	50	8.3
% of HCPs whose training was state sponsored	AAM-PHC	0	50	0	0	0	0	8.3
	DH/MC	100	50	100	100	100	50	83.3
	Total	100	100	100	100	100	50	91.7

Variables	Health Facility	GJ	KA	MP	TR	UK	WB	India
% of HCPs who received in-person training	AAM-PHC	0	50	0	0	0	0	8.3
	DH/MC	0	33.3	100	100	100	50	63.9
	Total	**0**	**83.3**	**100**	**100**	**100**	**50**	**72.2**
% of HCPs who received virtual training	AAM-PHC	0	0	0	0	0	0	0.0
	DH/MC	100	16.7	0	0	0	50	27.8
	Total	**100**	**16.7**	**0**	**0**	**0**	**50**	**27.8**
% of HCPs satisfied with the training	AAM-PHC	0	50	0	0	0	0	8.3
	DH/MC	100	50	100	75	50	50	70.8
	Total	**100**	**100**	**100**	**75**	**50**	**50**	**79.2**

Only a small proportion of the facilitators (37%) reported having received formal training in teleconsultation, with Karnataka (59.2%), Uttarakhand (41.7%), Tripura (38.8%), and West Bengal (38.2%) reporting higher percentages than Gujarat (10.3%) and Madhya Pradesh (30.7%). Around 86% of facilitators were trained by public facilities and 14% received training from private institutions. All facilitators (100%) from Gujarat and Karnataka underwent training from government institutions, compared to lower percentages that was noted in the other states.

Most facilitators (93.8%) received government-sponsored training; with those from Gujarat, Madhya Pradesh, and Uttarakhand receiving entirely government-sponsored training. A small percentage of the participants in Tripura (8.3%), West Bengal (7.6%) and Karnataka (6.2%) were sponsored by private institutions. In-person training was reported by a higher percentage of facilitators (74.9%), especially in Karnataka (93.8%), Madhya Pradesh (83.3%), and Tripura (83.3%). Training in virtual mode was reportedly more common in Uttarakhand (46.7%), Gujarat (33.3%), and West Bengal (30.8%).

Overall, 47.3% of respondents expressed satisfaction with the teleconsultation training, with variations being reported across the states: Facilitators from Gujarat, Karnataka, and Uttarakhand reported higher satisfaction (50%), while West Bengal, Madhya Pradesh, and Tripura had slightly lower rates (46.2%, 45.8%, and 41.65% respectively). (Table 7)

Table 7: Distribution of facilitators by training on teleconsultation

Variables	Health Facility	GJ	KA	MP	TR	UK	WB	India
% of facilitators trained on teleconsultation	AAM-SC	6.9	25.9	12.8	19.4	11.1	14.7	15.1
	AAM-PHC	3.4	33.3	17.9	19.4	30.6	23.5	21.4
	Total	**10.3**	**59.2**	**30.7**	**38.8**	**41.7**	**38.2**	**36.5**
% of facilitators trained at a government institution	AAM-SC	66.7	43.8	41.7	41.7	26.7	30.8	41.9
	AAM-PHC	33.3	56.2	33.3	50	53.3	38.5	44.1
	Total	**100**	**100**	**75**	**91.7**	**80**	**69.2**	**86.0**
% of facilitators trained at a private institution	AAM-SC	0	0	0	8.3	0	7.7	2.7
	AAM-PHC	0	0	25	0	20	23.1	11.4
	Total	**0**	**0**	**25**	**8.3**	**20**	**30.8**	**14.0**
% of facilitators whose training was independently sponsored	AAM-SC	0	0	0	0	0	7.7	1.3
	AAM-PHC	0	0	0	0	0	7.7	1.3
	Total	**0**	**0**	**0**	**0**	**0**	**15.4**	**2.6**
% of facilitators whose training was state sponsored	AAM-SC	66.7	43.8	41.6	41.7	26.7	23.1	40.6
	AAM-PHC	33.3	50	58.4	50	73.4	53.9	53.2
	Total	**100**	**93.8**	**100**	**91.7**	**100**	**77**	**93.8**
% of facilitators whose training was private sponsored	AAM-SC	0	0	0	8.3	0	7.6	2.7
	AAM-PHC	0	6.2	0	0	0	0	1.0
	Total	**0**	**6.2**	**0**	**8.3**	**0**	**7.6**	**3.7**

Variables	Health Facility	GJ	KA	MP	TR	UK	WB	India
% of facilitators who received in- person training	AAM-SC	33.3	37.5	41.7	33.3	13.3	30.8	31.7
	AAM-PHC	33.3	56.3	41.7	50	40	38.4	43.3
	Total	**66.7**	**93.8**	**83.3**	**83.3**	**53.3**	**69.2**	**74.9**
% of facilitators who received virtual training	AAM-SC	33.3	6.2	0	0	13.3	7.7	10.1
	AAM-PHC	0	0	16.7	16.7	33.3	23.1	15.0
	Total	**33.3**	**6.2**	**16.7**	**16.7**	**46.7**	**30.8**	**25.1**
% of facilitators satisfied with the training	AAM-SC	33.35	21.9	20.8	25	13.35	15.4	21.6
	AAM-PHC	16.65	28.15	25	16.65	36.65	30.8	25.7
	Total	**50**	**50**	**45.8**	**41.65**	**50**	**46.2**	**47.3**

In-depth interviews with the healthcare providers/ facilitators indicated that almost all of them had been oriented on teleconsultation services, except in Madhya Pradesh where only 10 out of 17 HCPs/ facilitators acknowledged having participated in one-day training on telemedicine services. Most healthcare providers and facilitators had previous exposure to telemedicine. However, very few of them mentioned having provided teleconsultation before the COVID-19 pandemic.

Among these respondents, the majority consisted of ANMs who indicated that they had not received any formal training in teleconsultation. MOs and CHOs mentioned that they had undergone a one-day virtual training session tailored to equip them with the skills needed to efficiently provide and facilitate teleconsultations as part of their roles in delivering e-Sanjeevani services. It is worth noting that some respondents mentioned having received training informally from their senior colleagues, and in these cases, no structured or formal training programs were conducted. Interestingly, some healthcare providers mentioned that they had been offering teleconsultation services even before the COVID-19 pandemic, and they had acquired the necessary skills and knowledge through prior experience, thereby obviating the need for additional training in teleconsultation.

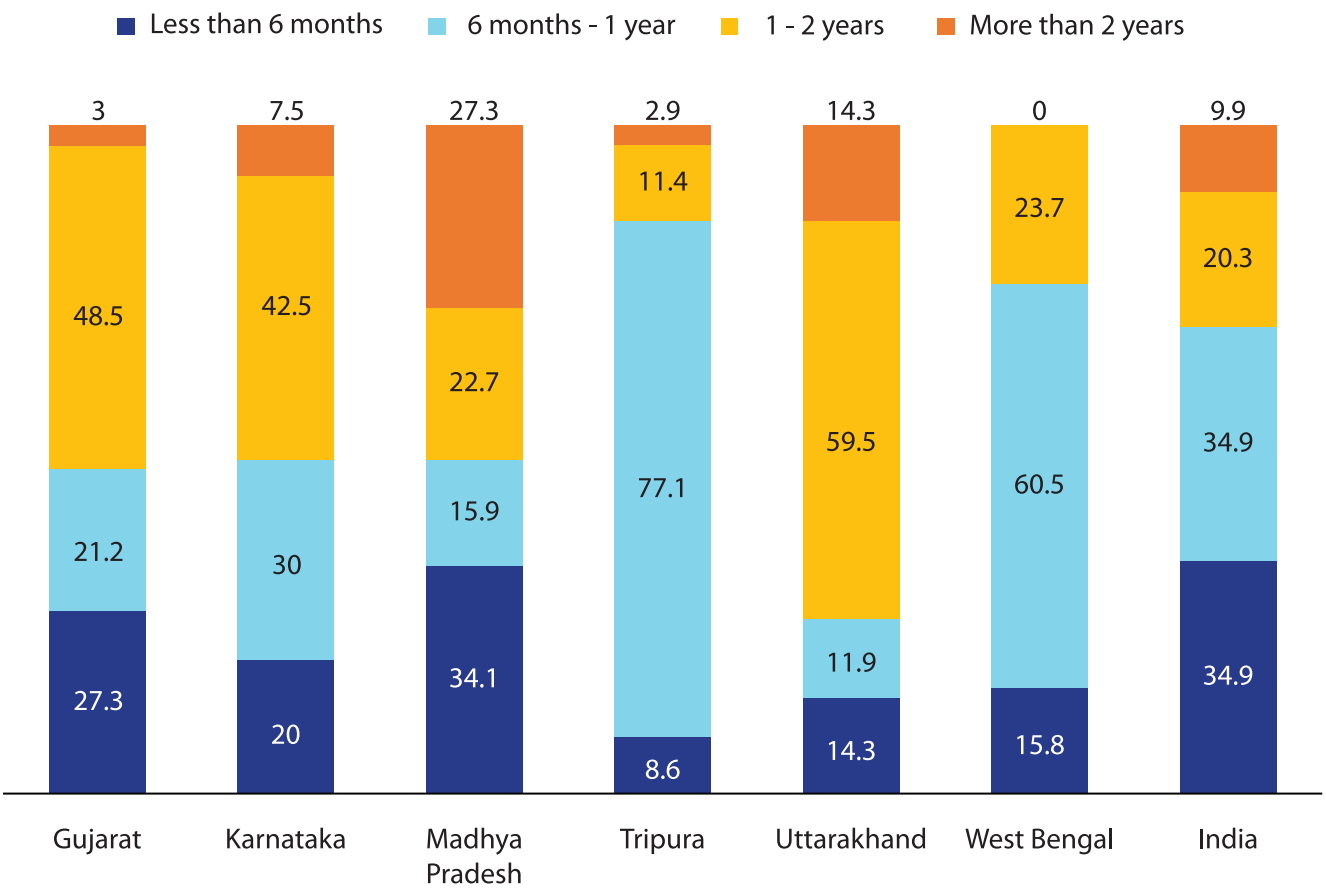
> Training ma'am maine 26 ko join kiya tha uske dusre din hi training ho gaya tha ,1 din ka training tha, Kaise kya call attend karna hain refer karna hain toh kaise karna hain kaha refer karna hain iss type se ,full day training tha
>
> **- Medical Officer, DH, Madhya Pradesh**

2.1.4 Teleconsultation Practice

Around 34.9% of the healthcare providers and facilitators had six to twelve months of experience, and 34.9% of them had practiced teleconsultation for a duration of one to two years.

A small segment of the participants provided/ facilitated teleconsultation for under 6 months (20.3%). Across all the states, only a small proportion of the HCPs/ facilitators practiced teleconsultation for more than 2 years (9.9%) with the highest proportion being reported in to Madhya Pradesh (27.3%), followed by Uttarakhand (14.3%) and Karnataka (7.5%). The proportion of HCPs/facilitators who practised telemedicine during the COVID-19 pandemic to date was very low in Tripura (2.9%) and Gujarat (3%) and nil in West Bengal (0%). HCPs/ facilitators practiced telemedicine for different durations across the states which has been depicted in the figure below. (Figure 3)

Figure 3: Duration of telemedicine practice (in %)



2.1.5 Availability of Teleconsultation services at health facility

On an average teleconsultation services were available six days a week across the states and 6 hours in a day at health facilities. The study assessed the patient load for teleconsultation at each facility to understand the pattern of utilization across the states. More than half (59.1%) of the participants reported an average of less than 5 patients availing teleconsultation per day at health facilities across the states. Lower proportions of HCPs/facilitators reported

patient count between 5-10 (21%), 11-15 (7.3%) and more than 15 (12.5%) in a day. Majority of the respondents from AAM-PHCs at Gujarat (48.5%), Madhya Pradesh (43.2%), Uttarakhand (39%), West Bengal (35.1%) and Tripura (26.5%) reported to have facilitated/provided teleconsultation for less than 5 patients on a daily basis indicating people were utilising teleconsultation services more at AAM-SCs across all states. Among these states, DH/MC in Uttarakhand (14.6%), Karnataka (12.5%), Madhya Pradesh (11.4%) and West Bengal (2.7%) were the only facilities catering to more than 15 patients availing teleconsultation services. (Table 8)

Table 8: Number of teleconsultations conducted in a day at the healthcare facility (in %)

	Facility Type	GJ	KA	MP	TR	UK	WB	India
< 5	AAM-SC	27.3	12.5	29.5	8.8	19.5	21.6	19.9
	AAM-PHC	48.5	22.5	43.2	26.5	39	35.1	35.8
	DH/MC	9.1	0	0	8.8	0	2.7	3.4
	Total	**84.9**	**35**	**72.7**	**44.1**	**58.5**	**59.4**	**59.1**
5 to 10	AAM-SC	3	5	4.5	11.8	2.4	2.7	4.9
	AAM-PHC	0	32	11.4	17.6	22	10.8	15.6
	DH/MC	0	0	0	2.9	0	0	0.5
	Total	**3**	**37**	**15.9**	**32.3**	**24.4**	**13.5**	**21.0**
11 to 15	AAM-SC	0	2.5	0	0	0	5.4	1.3
	AAM-PHC	0	7.5	0	11.8	0	8.1	4.6
	DH/MC	3	2.5	0	0	0	2.7	1.4
	Total	**3**	**12.5**	**0**	**11.8**	**0**	**16.2**	**7.3**
> 15	AAM-SC	0	0	0	2.9	0	8.1	1.8
	AAM-PHC	9.1	2.5	0	8.8	2.4	0	3.8
	DH/MC	0	12.5	11.4	0	14.6	2.7	6.9
	Total	**9.1**	**15**	**11.4**	**11.7**	**17**	**10.8**	**12.5**

Most of the respondents (37.7%) mentioned that the average waiting time for teleconsultation was atleast thirty minutes. This was followed by a relatively lower percentage of healthcare providers reporting a waiting time of an hour (26.5%), more than an hour (23.4%) and around fifteen minutes (12.4%). Gujarat reported the highest percentage (60.6%) of respondents reporting a waiting time of more than an hour followed by Uttarakhand (45.2%), Tripura (17.2%) and Karnataka (15%). Hardly any participants mentioned experiencing extended waiting times in West Bengal, with only 2.6% reporting such delays, while there were no reported instances of prolonged waiting in Tripura (0%). (Table 9)

Table 9: Average waiting time for teleconsultation services (in %)

	Facility Type	GJ	KA	MP	TR	UK	WB	India
15 mins	AAM-SC	0	0	6.8	0	0	5.3	2.0
	AAM-PHC	0	7.5	4.5	0	0	10.5	3.8
	DH/MC	3	12.5	4.5	0	14.3	5.3	6.6
	Total	**3**	**20**	**15.8**	**0**	**14.3**	**21.1**	**12.4**
30 mins	AAM-SC	0	10	22.7	8.6	2.4	21.1	10.8
	AAM-PHC	9.1	20	43.2	31.4	2.4	28.9	22.5
	DH/MC	3	2.5	6.8	8.6	0	5.3	4.4
	Total	**12.1**	**32.5**	**72.7**	**48.6**	**4.8**	**55.3**	**37.7**
1 hour	AAM-SC	9.1	7.5	4.5	8.6	9.5	10.5	8.3
	AAM-PHC	15.2	25	6.8	22.9	26.2	10.5	17.8
	DH/MC	0	0	0	2.9	0	0	0.5
	Total	**24.3**	**32.5**	**11.3**	**34.4**	**35.7**	**21**	**26.5**
More than 1 hour	AAM-SC	21.2	2.5	0	8.6	9.5	0	7.0
	AAM-PHC	33.3	12.5	0	8.6	35.7	2.6	15.5
	DH/MC	6.1	0	0	0	0	0	1.0
	Total	**60.6**	**15**	**0**	**17.2**	**45.2**	**2.6**	**23.4**

2.1.6 Purpose of Teleconsultation

On analysing the state-specific data, a significant proportion (74.2%) of the HCPs/ facilitators indicated that a large proportion of their patients were utilizing teleconsultation services for the very first time. A smaller proportion of participants reported offering follow-up teleconsultations (20.9%), and an even lower percentage mentioned providing emergency teleconsultations (4.9%).

A notably higher percentage of healthcare providers and facilitators in Tripura (94.3%), West Bengal (89.5%), Madhya Pradesh (88.7%), and Uttarakhand (76.1%) reported providing teleconsultation services for patients seeking their initial consultation. Conversely, a larger proportion of follow-up consultations were observed in Karnataka (62.5%) and Gujarat (24.2%), indicating that these regions have a more established telemedicine practice geared toward ongoing patient care and monitoring rather than just initial diagnoses. There was varying levels of utilization of teleconsultation for emergency consults according to the HCPs/ facilitators across the states in Gujarat (9%), Karnataka (7.5%), Uttarakhand (7.2%) and Tripura (5.8%). None of the participants in Madhya Pradesh and West Bengal reported providing/ facilitating emergency teleconsultations. (Table 10)

Table 10: Purpose of teleconsultation (in %)

	Facility Type	GJ	KA	MP	TR	UK	WB	India
First consultation	AAM-SC	15.2	0	25	22.9	19	31.6	19.0
	AAM-PHC	42.4	15	52.3	60	47.6	47.4	44.1
	DH/MC	9.1	15	11.4	11.4	9.5	10.5	11.2
	Total	**66.7**	**30**	**88.7**	**94.3**	**76.1**	**89.5**	**74.2**
Follow-up consultation	AAM-SC	12.1	20	9.1	0	2.4	5.3	8.2
	AAM-PHC	12.1	42.5	2.2	0	14.3	5.3	12.7
	DH/MC	0	0	0	0	0	0	0.0
	Total	**24.2**	**62.5**	**11.3**	**0**	**16.7**	**10.6**	**20.9**
Emergency consultation	AAM-SC	3	0	0	2.9	0	0	1.0
	AAM-PHC	3	7.5	0	2.9	2.4	0	2.6
	DH/MC	3	0	0	0	4.8	0	1.3
	Total	**9**	**7.5**	**0**	**5.8**	**7.2**	**0**	**4.9**

2.1.7 Reason for Teleconsultation

The study provides insights into the type of diseases or conditions encountered across different healthcare facility types and states. Non-Communicable Diseases (NCDs) emerged as a dominant category, accounting for an average of 61% of all teleconsultations. Among the states, Tripura occupied the forefront with 97.1% of teleconsultations being attributed to NCDs, followed by Karnataka (75%) and Uttarakhand (61.9%). Lower proportion of healthcare providers reported providing teleconsultation for NCDs in Madhya Pradesh (47.7%), Gujarat (42.4%) and West Bengal (42.1%).

Communicable Diseases (CDs) also constituted a substantial proportion (23.2%), of teleconsultations on average with varying percentages reported across West Bengal (50%), Gujarat (30.3%), Madhya Pradesh (25%) Uttarakhand (21.4%) and Karnataka (12.5%). Notably, none of the HCPs/facilitators in Tripura reported encountering cases of communicable diseases during teleconsultation. This could reflect region-specific infectious disease patterns.

Teleconsultations for Reproductive and Child Health (RCH) (3.7%) were relatively less common. The highest proportion was reported in Madhya Pradesh (13.6%) followed by Gujarat (3%), Tripura (2.9%) and Uttarakhand (2.4%). Such cases were not reported by HCPs/facilitators in Karnataka and West Bengal.

The "Others" category encompassed a range of health concerns including gastrointestinal problems, musculoskeletal complaints, skin problems and general malaise which collectively accounted for 12.1% of the reported health conditions addressed through teleconsultations. Gujarat (24.3%) and Uttarakhand (14.2%) reported substantial proportions of teleconsultations for these miscellaneous ailments. Such complaints were less commonly reported in Madhya Pradesh (13.6%), Karnataka (12.5%) and West Bengal (7.9%). None of the HCPs/facilitators in Tripura came across such diseases/conditions. (Table 11)

Table 11: Distribution of Healthcare providers/facilitators by type of diseases/conditions for which teleconsultation was provided (in %)

	Facility Type	GJ	KA	MP	TR	UK	WB	India
NCDs	AAM-SC	15.2	20	18.2	25.7	9.5	10.5	16.5
	AAM-PHC	24.2	52.5	29.5	60	47.6	21.1	39.2
	DH/MC	3	2.5	0	11.4	4.8	10.5	5.4
	Total	**42.4**	**75**	**47.7**	**97.1**	**61.9**	**42.1**	**61.0**
CDs	AAM-SC	9.1	0	9.1	0	4.8	23.7	7.8
	AAM-PHC	21.2	2.5	4.5	0	9.5	26.3	10.7
	DH/MC	0	10	11.4	0	7.1	0	4.8
	Total	**30.3**	**12.5**	**25**	**0**	**21.4**	**50**	**23.2**

	Facility Type	GJ	KA	MP	TR	UK	WB	India
RCH	AAM-SC	0	0	6.8	0	0	0	1.1
	AAM-PHC	3	0	6.8	2.9	0	0	2.1
	DH/MC	0	0	0	0	2.4	0	0.4
	Total	3	0	13.6	2.9	2.4	0	3.7
Others	AAM-SC	6.1	0	0	0	7.1	2.6	2.6
	AAM-PHC	9.1	10	13.6	0	7.1	5.3	7.5
	DH/MC	9.1	2.5	0	0	0	0	1.9
	Total	24.3	12.5	13.6	0	14.2	7.9	12.1

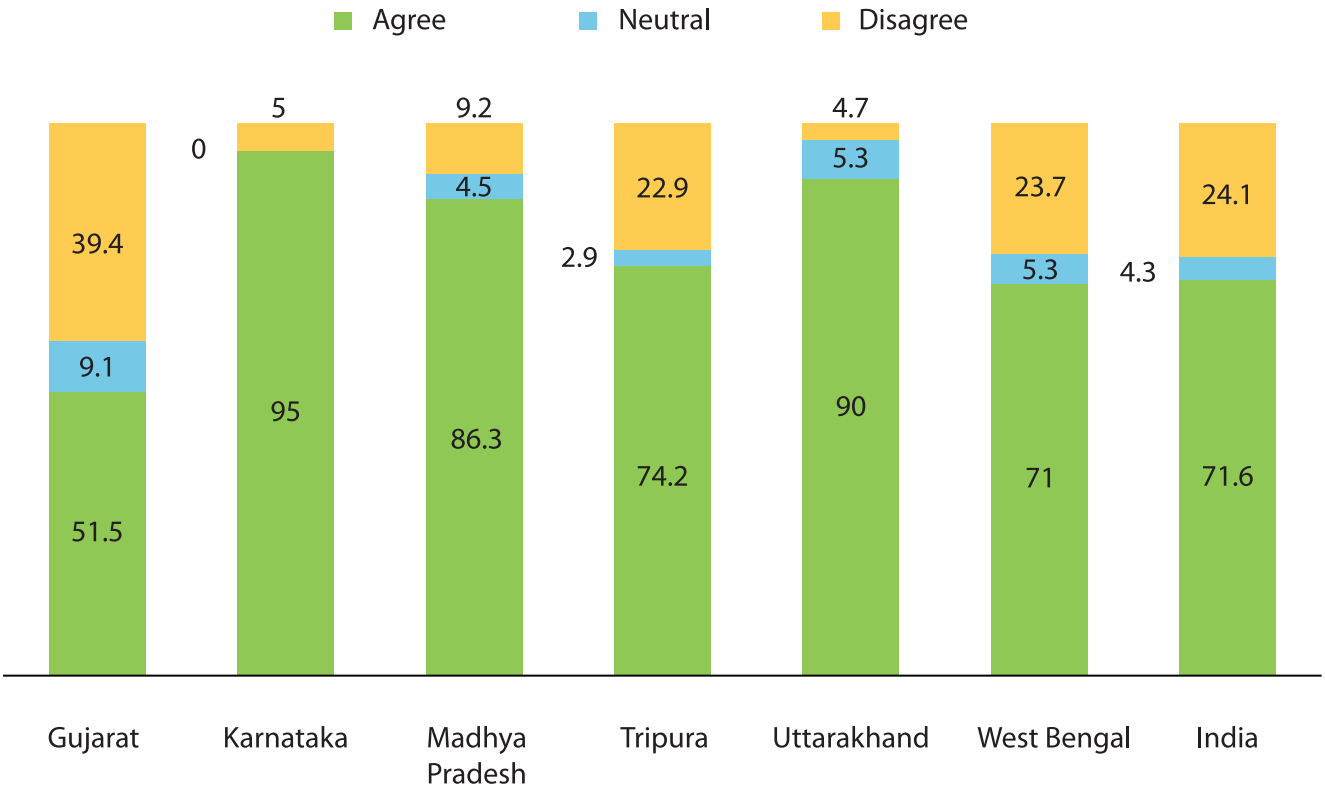
2.1.8 Perceptions and Preferences

Based on in-depth interviews with healthcare providers and facilitators, it was evident that approximately 75% of the interviewed doctors at the HUB level possessed a clear understanding of e-Sanjeevani's role in delivering teleconsultation services to beneficiaries in remote and rural areas. Among the frontline functionaries, an overwhelming majority (90%), were familiar with the features of the e-Sanjeevani mobile application. Some ASHAs, ANMs, and CHOs stated that they used their mobile phones to facilitate teleconsultation services at healthcare facilities. These healthcare workers not only acknowledged the utilization of telemedicine but also attested to its benefits for rural populations. Most respondents were well- informed about e-Sanjeevani OPD, a virtual application that enables teleconsultations from the comfort of one's home.

Healthcare providers and facilitators reported high satisfaction levels among telemedicine beneficiaries, who appreciated the convenience of consulting specialists without the need for extensive travel to in-person consultations. This underscores the positive impact of telemedicine on improving healthcare access and enhancing the patient experience.

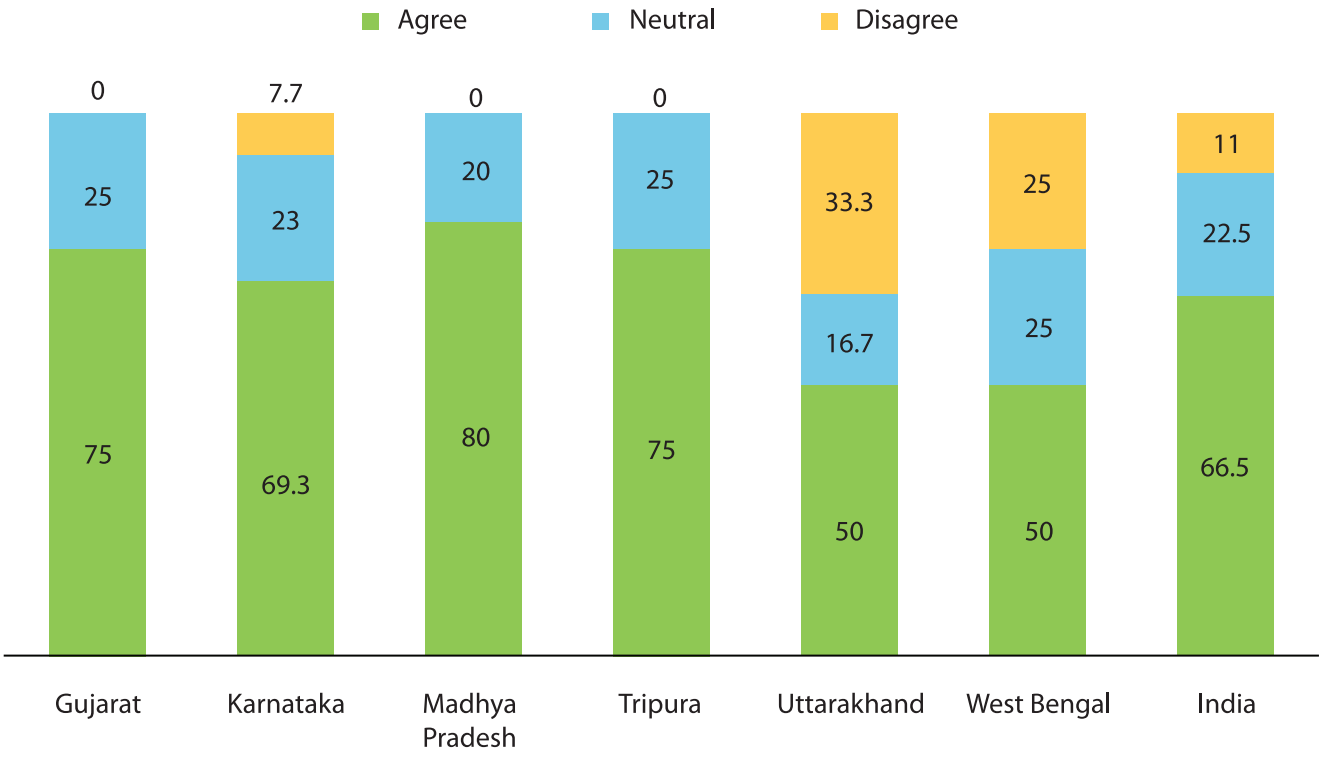
The study assessed the effect of telemedicine on the accessibility to healthcare services. Based on the quantitative data results, a substantial portion of healthcare providers/ facilitators (71.6%) believed that the implementation of teleconsultation services would expand the reach and accessibility of healthcare services. Among this group, a significant majority of healthcare providers and facilitators in Karnataka (95%), Uttarakhand (90.5%), and Madhya Pradesh (86.3%) agreed with the assertion that telemedicine would increase access to and improve the reach of healthcare services across the six districts. Insights gathered from in-depth interviews with healthcare providers and facilitators underscored that beneficiaries found value in being able to consult specialists without the burden of extensive travel for in-person consultations, reaffirming the positive impact of telemedicine in enhancing healthcare access. (Figure 4)

Figure 4: Telemedicine as a good medium to improve access to the healthcare system (in %)



Across all states, the majority of healthcare providers/facilitators (66.5%) thought that video-conferencing was superior to telephonic communication as a means for enhancing patient care. A smaller percentage either disagreed (11%) with this perspective or remained non-committal (22.5%). A significant percentage of the HCPs/facilitators in Madhya Pradesh (80%), Gujarat (75%), Tripura (75%) and Karnataka (69.3%) were of the opinion that video conferencing is better than audio only communication. Only half of the participants (50%) from Uttarakhand and West Bengal were in agreement on the same. Notably, a substantial number of HCPs/ facilitators from Uttarakhand (33.3%), West Bengal (25%) and Karnataka (23%) assumed a neutral stance on this matter possibly indicating a readiness to explore both video and telephonic modes of communication based on specific patient needs and circumstances. (Figure 5)

Figure 5: Video conferencing as compared to telephonic communication helps improve patients care (in %)



According to the Telemedicine Practice Guidelines of 2020 in India, registered medical practitioners (RMPs) are authorized to determine whether a technology-based consultation is sufficient or if an in-person evaluation is necessary. It is crucial in this context to comprehend the treatment preferences of healthcare providers.

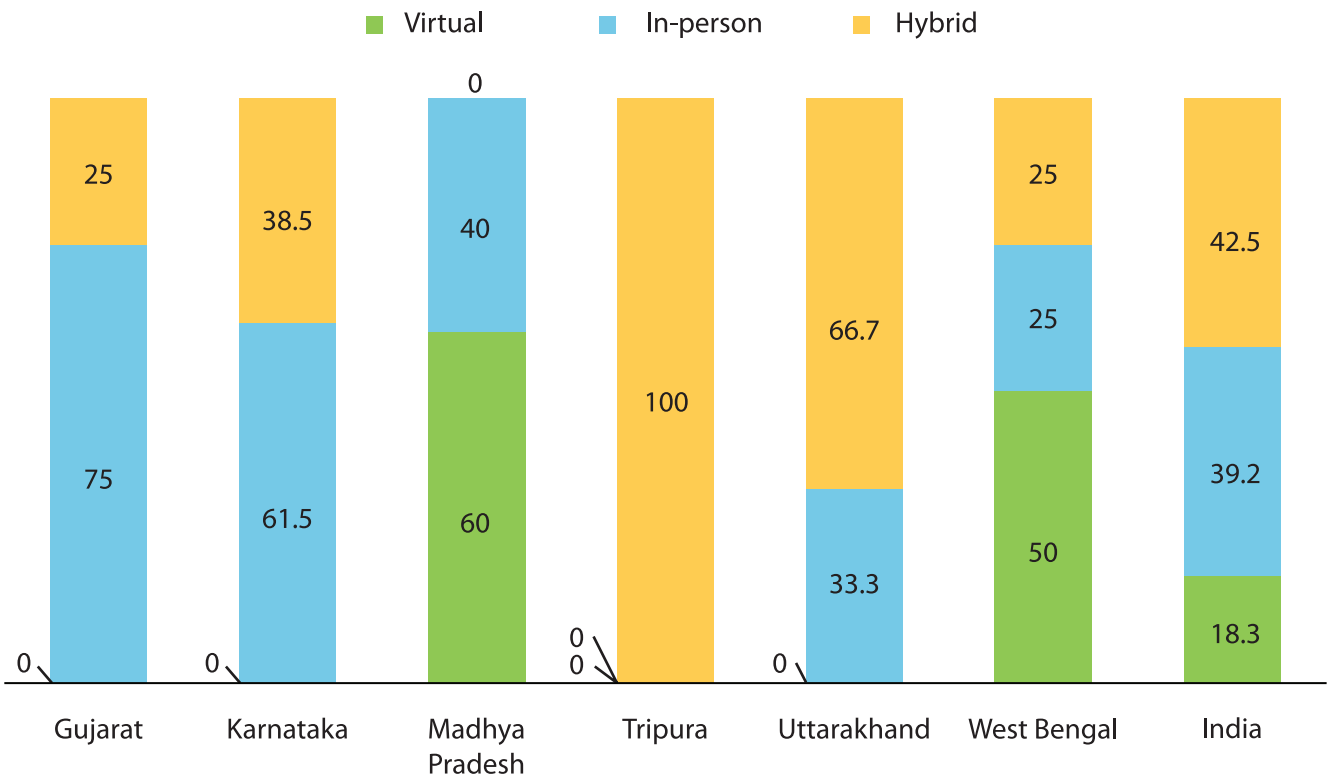
The study revealed that among healthcare providers/facilitators, only a modest percentage (18.3%) opted for e-Sanjeevani, while a larger proportion (39.2%) preferred in-person consultations due to the trust and confidence it fostered in the quality of healthcare. Additionally, 42.5% did not specify a preference, valuing both in-person and teleconsultations.

Comparing states, in Karnataka, the preference was 61.5% for in-person consultations, and Gujarat led with 75% preferring in-person consultations. Notably, preference for e-Sanjeevani was most pronounced in Madhya Pradesh (60%) and West Bengal (50%). In Uttarakhand, more than half of the respondents (66.7%) reveal a clear inclination towards a combination of in- person consultations and teleconsultations. While in Tripura, all the study participants unanimously favoured this hybrid approach, highlighting a particularly strong preference for blending traditional and telemedicine services. (Figure 6)

In West Bengal, while quantitative data analysis showcased a higher preference for virtual consultations, analysis of the in-depth interview findings revealed a more nuanced perspective. Many healthcare providers favoured in-person consultations due to the belief that physical examinations and treatments are more effective in a face-to-face setting. In a diverse state like West Bengal, different healthcare providers may have unique reasons for their preferences, leading to discrepancies. Similarly, in Tripura, quantitative data analysis revealed unanimous support for a hybrid approach, blending in-person and virtual consultations. However, qualitative analysis uncovered a more diversified set of views, with

some participants favouring in-person consultations. This underscores the multifaceted nature of healthcare provider preferences, which may have been influenced by diverse factors such as cultural beliefs, access to technology, healthcare infrastructure and trust in healthcare delivery methods.

Figure 6: Distribution by preference to provide consultation (in %)



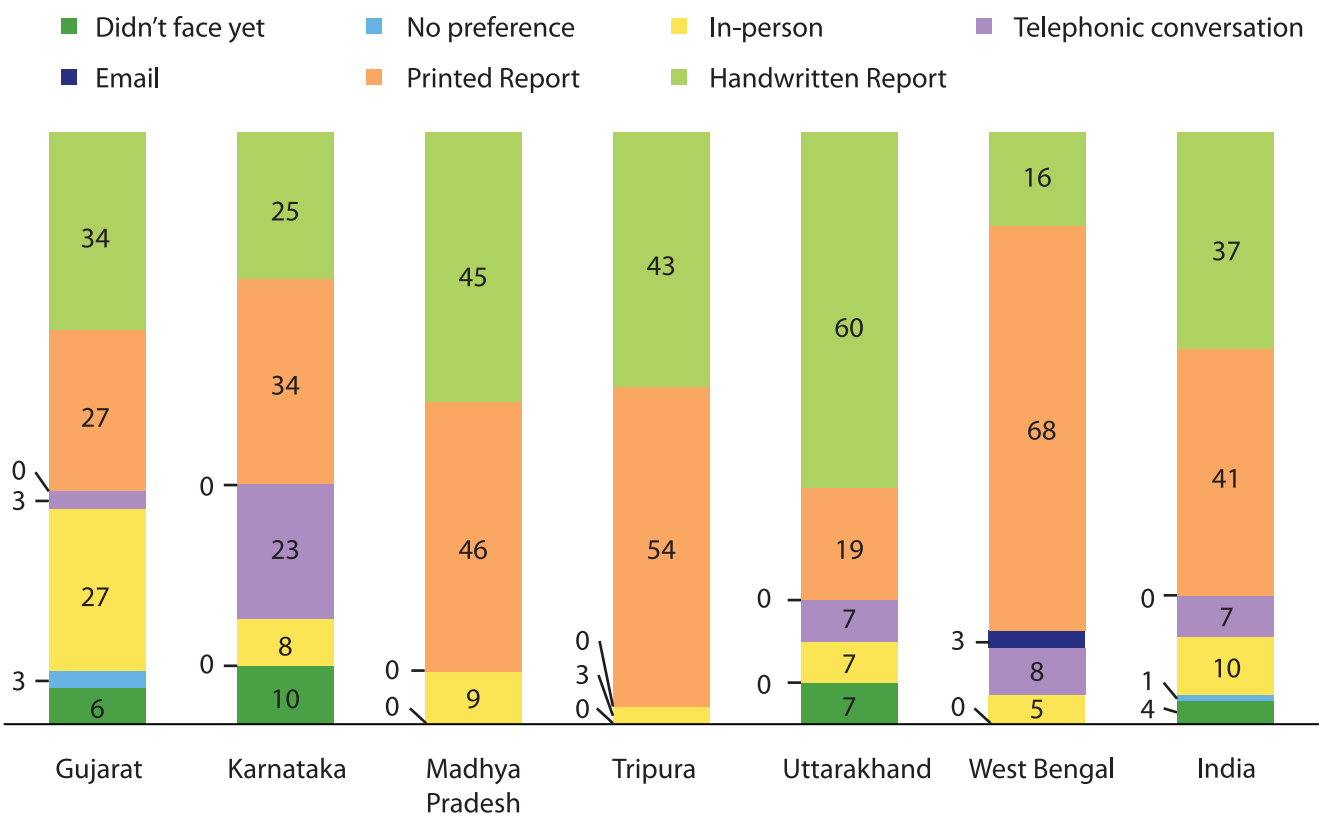
A notable 41% of HCPs and facilitators showed a preference for direct communication through printed prescriptions. On the other hand, a small percentage, around 4%, reported that they hadn't encountered a situation where they needed to communicate such risky results to patients. Overall, 37% of the respondents preferred providing handwritten diagnostic reports. These personalized reports may have been seen as a way to ensure that patients receive detailed information in a format that is easy to understand.

Delving into the regional preferences, among those who favoured handwritten diagnostic reports, a substantial 60% hailed from Uttarakhand, while 45% were based in Madhya Pradesh, and 43% in Tripura. This regional variation suggests that cultural or contextual factors might influence how HCPs choose to communicate sensitive medical information. In terms of communication mediums, only a modest 7% of respondents indicated a preference for telephonic conversations. Notably, the majority of this group, around 23%, came from Karnataka. This could imply that some regions might find telephonic communication more suitable due to logistical or technological considerations.

A minor portion of the respondents (10%) expressed a preference for in-person communication when delivering diagnostic results. Among them, a significant proportion of 27% was attributed

to Gujarat. This preference might be reflective of the importance placed on face-to- face interactions in certain cultural or local contexts. (Figure 7)

Figure 7: Preferred mode of communication of diagnostic results (in %)



2.1.9 Challenges related to Teleconsultation

A comprehensive understanding of the challenges faced by healthcare providers and facilitators is crucial for devising strategies to overcome challenges and enhance the teleconsultation experience. Notably, 67.2% of healthcare providers and facilitators reported facing diverse challenges, as depicted in Figure 8. Among them, all the participants (100%) from Karnataka, along with substantial proportions from Gujarat (94%) and Uttarakhand (92.8%), reported encountering such difficulties. Predominantly, issues surrounding compromised internet connectivity took precedence, with 86.4% of respondents pinpointing this as a key obstacle. Concurrently, 79.6% voiced concerns related to protracted waiting periods during teleconsultation calls. A significant proportion (38.8%) of HCPs/facilitators reported paucity of an adequate teleconsultation set-up. Lesser voiced challenges, included issues related to confidentiality (25.7%), review of patient records (24.2%), and power outages (16.3%).

The other challenges (43.7%) faced in teleconsultation include difficulties in seeing and hearing patients resulting from audio issues, lack of direct conversation with patients as facilitators convey information to the specialists, insufficient patient history and examination information, incorrect patient details on the portal, uncertainty about waiting times, inability to physically examine patients, cumbersome doctor selection process, challenges with patient follow-up and report sharing. HCPs/facilitators faced challenges related to insufficient funds

for recharges and personal internet usage. The need for diagnostic test results in order to properly consult patients, login issues and staff shortages were also emphasized.

Figure 8: Whether challenges were faced during teleconsultation (in %)

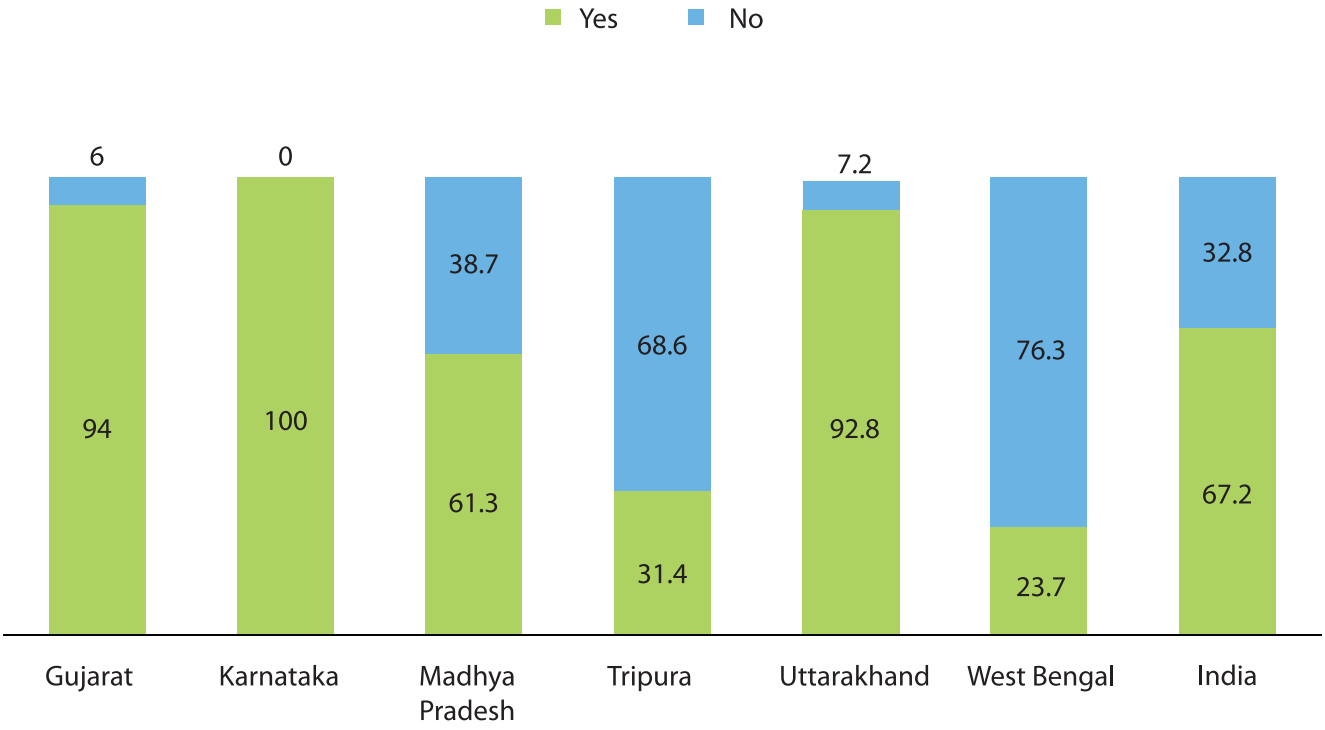


Figure 9: Type of barriers /challenges faced during teleconsultation (in %)

	Facility Type	GJ	KA	MP	TR	UK	WB	India
Reviewing patient records	AAM-SC	0	0	7.5	29.1	2.1	0	6.5
	AAM-PHC	13.1	2.95	14.3	22.9	19.3	10	13.8
	DH/MC	0	7.3	2.5	0	4.3	10	4.0
	Total	**13.1**	**10.25**	**24.3**	**52**	**25.7**	**20**	**24.2**
Telephone consultation Set-up	AAM-SC	29.1	10.2	15	12.5	8.7	0	12.6
	AAM-PHC	32.1	23.4	35.7	35.4	30.8	0	26.2
	DH/MC	0	0	0	0	0	0	0.0
	Total	**61.2**	**33.6**	**50.7**	**47.9**	**39.5**	**0**	**38.8**

	Facility Type	GJ	KA	MP	TR	UK	WB	India
Concerns related to confidentiality	AAM-SC	9.6	8.7	17.5	6.2	0	0	7.0
	AAM-PHC	35.2	22.6	28.5	22.9	3.1	0	18.7
	DH/MC	0	0	0	0	0	0	0.0
	Total	**44.8**	**31.3**	**46**	**29.1**	**3.1**	**0**	**25.7**
Internet connectivity issues	AAM-SC	29.1	19.6	30	41.6	17.4	0	23.0
	AAM-PHC	61.2	62	45.7	58.3	68.6	57.5	58.9
	DH/MC	3.1	8	0	0	6.5	10	4.6
	Total	**93.4**	**89.6**	**75.7**	**99.9**	**92.5**	**67.5**	**86.4**
Power/ Electricity issues	AAM-SC	3.1	5.1	25	0	0	0	5.5
	AAM-PHC	6.6	10.9	21.8	0	10.6	12.5	10.4
	DH/MC	0	0	0	0	2.1	0	0.4
	Total	**9.7**	**16**	**46.8**	**0**	**12.7**	**12.5**	**16.3**
Long waiting time	AAM-SC	22.9	19.6	22.5	41.6	10.8	12.5	21.7
	AAM-PHC	57.9	64.9	50.3	58.3	62.4	47.5	56.9
	DH/MC	0	4.3	0	0	2.1	0	1.1
	Total	80.8	88.8	72.8	99.9	75.3	60	79.6
Others	AAM-SC	16.6	8.8	0	16.6	4.3	12.5	9.8
	AAM-PHC	30	32.3	0	33.3	50.2	20	27.6
	DH/MC	3.1	8.05	0	0	6.5	20	6.3
	Total	**49.7**	**49.15**	**0**	**49.9**	**61**	**52.5**	**43.7**

Based on the results from the analysis of the in-depth interviews conducted among HCPs/ facilitators, one of the prominent concerns highlighted was the extended waiting period that patients had to endure when seeking teleconsultation services. This prolonged waiting time discouraged patients from opting for teleconsultations. Instances of call disconnection and connectivity issues further exacerbated the problem, resulting in patients being hesitant to utilize teleconsultation services.

Healthcare providers suggested a potential solution to address this issue by proposing the establishment of a dedicated broadband infrastructure specifically designated for teleconsultation purposes within healthcare institutions. Many healthcare providers currently rely on their mobile phones for teleconsultations, which can lead to suboptimal connectivity and overall patient experience.

> Network issues and non-availability of doctors. Sometimes when there are doctors there is connectivity issues, due to this the patient walks out. To resolve this, it is important that the doctors should be available and the network issues should be resolved. there should be provision of broadband.
>
> **- Medical Officer In-charge, UPHC, Tripura**

> There is problem with the tower, there is issues with network connectivity. Network issues occur even at sub-centres. When they try to connect from sub-centre, though I am available here, it shows in the portal that I am not available. There is issue with visuals/video shown. when we try to connect to AGMR too, it shows doctors unavailable. I feel if network connectivity is resolved and broadband is provided then people can connect even from Agartala and the problems will get resolved.
>
> **- Medical Officer In-charge, PHC, Tripura**

Facilitators at AAM-PHCs and AAM-SCs also mentioned facing several challenges. One of the foremost issues is the shortage of doctors and specialists at the HUBs, leading to extended waiting times for patients and resulting in low utilization of telemedicine services in rural areas.

Patients are often unaware of the specialists' schedules at HUBs and tend to visit for teleconsultations whenever they find the time, leading to reduced teleconsultation usage and a preference for in-person consultations. Furthermore, facilitators reported difficulties with the facility's token number generation system, with tokens expiring faster than expected. This situation results in doctors not attending to patients who are waiting for teleconsultations. In some cases, the token numbers were not generated in the patient's local language, causing misunderstandings and missed teleconsultations with doctors. Additionally, some facilitators noted a shortage of essential medications at the facility, forcing beneficiaries to purchase them from external vendors. Other noteworthy challenges highlighted by healthcare providers across various regions for teleconsultations included issues related to uninterrupted internet connectivity, high caseloads, and privacy concerns.

Healthcare providers/facilitators noted an inability of IT services to provide the necessary internet capacity and speed to conduct visual and interactive teleconsultations with patients. Providers reported the need for this was exacerbated by frequent power outages and other

electrical issues. Furthermore, because patients did not contact during the designated time periods, infrastructure availability, call response, and teleconsultation service management were all concerns. Furthermore, in addition to providing teleconsultations, healthcare providers/facilitators were required to spend time on administrative responsibilities, such as treating patients in the medical facility, which often hampered the teleconsultations. As a result, they proposed that specialised staff be assigned to oversee the teleconsultation services.

2.1.10 Suggestions

The study assessed healthcare providers/facilitators to give their suggestions based on the current state of telemedicine services, to comprehend methods to increase telemedicine usage in the states. As illustrated in Figure 20, healthcare providers/facilitators put forth a variety of recommendations to enhance the acceptance of e-Sanjeevani services. Overall, it was stated that generating awareness through Information, Education, and Communication (IEC) activities within the community (approximately 78%) was a crucial prerequisite for generating demand for e-Sanjeevani services. They also made suggestions regarding enhancement of human resources (65.5%), establishment of a dedicated space for teleconsultation (64.7%), provision of specialized IT support (47.4%).

The suggestions made by various healthcare providers/facilitators highlighted key aspects for enhancing telemedicine services. Primarily, they endorsed the idea of having specialist consultations available at least once a week, and emphasized the necessity of optimizing the utilization of specialist doctors, along with effectively allocating patients to appropriate specialties. The importance of specialist availability and dissemination of information regarding their schedules was underscored. Training programs were deemed essential for enhancing the competence of staff in delivering telemedicine services. Suggestions to streamline the teleconsultation process, included steps to minimize the queue time on the calls and extending the duration for which the token generated was active. The need for enhancement of telecommunication network capabilities was reported by HCPs/ facilitators who indicated that patients experienced delays in OTP number generation as well as in receiving it on the mobile application and dropped calls. Community awareness campaigns through mediums like TV and electronic media are crucial to reach a wider audience. Moreover, there was a call for improved infrastructure, including improved broadband services, more computers, and additional diagnostic facilities at the AAM-PHCs. Few HCPs/facilitators highlighted the importance of adhering to ethical standards as the trust between healthcare providers and patients is necessary for fostering a sense of security and reliability in the telemedicine process.

The following insights are based on data collected through in-depth interviews with healthcare providers and facilitators, in which a predominant theme emerged, with most healthcare providers and facilitators emphasizing the importance of raising awareness about telemedicine. Many suggested the need for refresher training sessions. Several respondents expressed a demand for enhanced facilities, such as increased doctor availability at the HUBs and improved diagnostic capabilities, including sonography and X-ray services. Connectivity and network challenges were acknowledged by the majority of healthcare providers and facilitators as a crucial obstacle to be overcome in order to enhance the effectiveness of e-Sanjeevani services. To stimulate greater demand for teleconsultations, many healthcare providers and facilitators suggested using telemedicine posters and providing information about teleconsultation via SMS to pique people's interest. In addition to these suggestions, the idea of organizing regular community gatherings with doctors, community stakeholders,

and grassroots healthcare providers/facilitators was put forward as a means to motivate community members to make greater use of teleconsultations.

> Man power should be increased, doctor availability should be increased as much as possible, there should be good neuro doctors too.
>
> **- CHO, AAM-SC, West Bengal**

> Training will have to be given to the staff, subject-wise, the doctor of the subject should receive a call, like if you have a call for child, then the call should come to the child's doctor, not to the elder. Good training to ANM, Staff, CHO would be beneficial.
>
> **- Pediatrician, DH, West Bengal**

2.1.11 Enablers and Barriers

According to HCPs/facilitators, e-Sanjeevani has proven to be beneficial to the general population. Patients do not have to wait for treatment and can get services whenever it is convenient for them. According to them, it saves time and reduces patient burden at health facilities. Beneficiaries who are unable to travel to remote locations can also receive timely treatment via teleconsultation services. HCPs found it useful for delivering teleconsultation to those living in remote places as well as the elderly population who cannot travel. Through teleconsultation it is possible for patients to consult specialists based at district hospitals or medical colleges. While HCPs were satisfied with the services, facilitators felt the need for in- person consultation as major health challenges cannot be addressed through virtual consultation and require proper diagnosis.

> Village ka log joh special cases ke liye medical college mein jana padhta hain, bahut thik hain telemedicine mein, kyunki medical college yaha se 40km durr hain sab log nahi jaa pattein, old age log hain sab log hain woh nahi jaa pattein toh consultation aacha hain. Haa bahut saare logoan ke ghar par koi nahi hain, paisa bhi bahut bachata hain kyuinki paisa ka bhi bahut jarrurat hain, bolte hain hamare pass paisa bachata nahi hain, toh hum yaha se arrange karke medicine telemedicine se karke de dete hain.
>
> **- Medical Officer, AAM, Uttarakhand**

2.2 Users of e-Sanjeevani Services

2.2.1 Sociodemographic Information

Interviews were conducted among 991 e-Sanjeevani beneficiaries to understand the status of the e-Sanjeevani program and the factors affecting the utilization of services. The facility-wise distribution of e-Sanjeevani users was as follows: 44.6% from AAM-SHCs, 46.7% from AAM- PHCs, and 8.7% from the DH level. The average age of the respondents was 43 years. There was a relatively even distribution of users across different age groups, with a slightly higher representation of younger individuals. Elderly age group accounted for 20.3% of the e-Sanjeevani users. The majority of users (60.2%) were females. Females outnumbered males in Karnataka (82.4%), and Uttarakhand (66.7%).

The distribution of e-Sanjeevani users by educational attainment varied across different districts. Users came from diverse educational backgrounds, with approximately 29.3% having completed elementary school, 31.1% completing secondary school, 17.2% completing school education, 6.8% completing graduation, and 14.4% having no education. The proportion of users who had never attended school was highest in Madhya Pradesh (28.1%) and lowest in Uttarakhand and Karnataka (7.9%).

More than half (63.8%) of the e-Sanjeevani users were unemployed, while smaller percentages of them were employed (35.1%) and receiving pension after retirement (1.1%). Among those beneficiaries who were employed, half (49.9%) were engaged in agricultural-related activities and 24.7% were small business owners or traders. Farmers constituted the largest proportion of users in Madhya Pradesh, West Bengal and Karnataka. A minority (16.1%) of the beneficiaries were engaged in employment in the private sector, or were teachers, drivers or labourers. Monthly household income was less than Rs. 10,000 for 52.6% of users, between Rs. 10,001 and Rs. 30,000 for 41%, and above Rs. 30,000 for 6.4%. (Table 12)

Table 12: Socio-demographic characteristics of users

Variables	Categories	Frequency (n)	Percentage (%)
Age	18 to 29 years	243	24.5
	30 to 39 years	211	21.3
	40 to 49 years	163	16.4
	50 to 59 years	173	17.5
	60 years and above	201	20.3
Gender	Male	394	39.8
	Female	597	60.2

Variables	Categories	Frequency (N)	Percentage (%)
Educational status	No schooling	143	14.4
	Primary	290	29.3
	Secondary	308	31.1
	Higher secondary	170	17.2
	Graduation	67	6.8
	Post-graduation	11	1.1
	Others	2	0.2
Employment status	Employed	348	35.1
	Unemployed	632	63.8
	Retired	11	1.1
Current profession	Farmer	170	49.9
	Government Employee	36	10.3
	Business / Self - employed	86	24.7
	Others	56	16.1
Monthly household income	10000 or less	521	52.6
	10001 – 30000	406	41
	30001 – 50000	52	5.2
	More than 50000	12	1.2
	Total	991	100

2.2.2 Accessibility to and Experience of Teleconsultation

2.2.2.1 Access and Transportation to e-Sanjeevani centre

The e-Sanjeevani usage in terms of proximity of the healthcare centre to the patient's homes and the time required to reach the facility was studied. A majority of e-Sanjeevani users (51.3%) resided within a kilometre of a health centre, which indicated that those who lived close to the teleconsultation centre most commonly availed the e-Sanjeevani services. A smaller fraction (2.8%) of the beneficiaries lived at a distance greater than 5 kilometres. The e-Sanjeevani service was found to be particularly beneficial for communities near AAM-PHCs/SHCs in Gujarat (77.2%), Karnataka (58.8%), Madhya Pradesh (56.9%), and West Bengal (56.4%). Proximity to the teleconsultation centre ensures easy access to not only routine teleconsultation services but also specialty care, as it enables patients to connect with specialists placed at higher centres. Uttarakhand (6.1%), Madhya Pradesh (3.8%) and West Bengal (3%) were found to have a higher proportion of users who lived at a distance of more

than 5 km away from the e-Sanjeevani centre. Such patients would find it beneficial to access services through the e-SanjeevaniOPD application as it enables the patient to connect with doctors directly, thereby promoting easier access to healthcare services.

Close to half (47.5%) of e-Sanjeevani users mentioned that the average time it took for them to reach their nearest healthcare facility was 15 minutes or less. 37.2% take 15 to 30 minutes, indicating the service's convenience. A small proportion of the users spent between 45 minutes to an hour (1.3%) and more than an hour (0.5%) in travelling to the healthcare facility, again signifying how e-SanjeevaniOPD application could be utilized by such patients to save time spent in accessing healthcare.

The preferred modes of reaching the healthcare facility included walking (46.8%), public transportation (29%), and personal vehicles (23.7%) which depended on the proximity of the patients' home to the teleconsultation centre. The majority of users in Gujarat (73.1%), Karnataka (57.6%), and Madhya Pradesh (51.3%) were able to conveniently access the government healthcare centres as it was situated at a walkable distance. Users from Madhya Pradesh (3.1%) district used non-motorized modes of transportation such as bicycles and rickshaws.

The study intended to explore factors like distance from the e-Sanjeevani centres, travel time and mode of transportation in order to understand whether access to healthcare services may be improved through e-Sanjeevani services across different regions. (Table 13)

Table 13: Distribution of users based on the Accessibility to and Experience of teleconsultation (in %)

Variables	Categories	GJ	KA	MP	TR	UK	WB	India
Access and Distance								
Distance between the health facility and home	Less than 1 Km	77.2	58.8	56.9	20.6	37.6	56.4	51.3
	1 to 3 Km	17.5	30.9	35.6	69.1	48.5	24.8	37.7
	3 to 5 Km	2.9	8.5	3.8	10.3	7.9	15.8	8.2
	More than 5 Km	2.3	1.8	3.8	0	6.1	3	2.8

Variables	Categories	GJ	KA	MP	TR	UK	WB	India
Travelling time	Less than 15 Minutes	71.3	86.7	41.9	10.9	36.4	37.6	47.5
	15 to 30 Minutes	15.8	12.7	53.1	59.4	33.9	48.5	37.2
	31 to 45 Minutes	9.9	0.6	4.4	29.1	23	13.9	13.5
	46 Minutes - 1 Hour	1.8	0	0.6	0.6	4.8	0	1.3
	More than 1 Hour	1.2	0	0	0	1.8	0	0.5
Transportation								
Mode of Transportation	Walk	73.1	57.6	51.2	24.2	32.1	42.4	46.8
	Public transport	12.9	14.5	1.9	60.6	31.5	52.7	29.0
	Personal vehicle	14	27.9	43.8	15.2	36.4	4.8	23.7
	Others	0	0	3.1	0	0	0	0.5
Expenditure								
Average amount of money spent per visit to the healthcare facility	Rs. 100 or less	21.6	36.4	42.5	48.5	44.8	58.2	42.0
	Rs. 101 - Rs. 500	12.9	3	6.9	27.9	29.7	10.9	15.2
	Rs. 501 - Rs. 1000	0.6	0	0	0	1.2	0	0.3
	More than Rs. 1000	0	0	0	0	0	0	0.0
	No expense	64.9	60.6	50.6	23.6	24.2	30.9	42.5
Transportation Expenses	Rs. 100 or less	25.1	37.6	46.9	63	60	55.2	48.0
	Rs. 101 - Rs. 300	4.7	1.8	1.3	13.3	7.3	11.5	6.7
	Rs. 301 or more	0.6	0	0	0	0	1.2	0.3
	No expense	69.6	60.6	51.9	23.6	32.7	32.1	45

Variables	Categories	GJ	KA	MP	TR	UK	WB	India
Time required per teleconsultation visit								
Average Time required per visit	Less than 1 hour	81.3	90.9	66.3	84.2	61.2	86.1	78.3
	1 hour - 3 hours	18.1	9.1	33.1	15.8	37.6	13.3	21.2
	More than 3 hours	0.6	0	0.6	0	1.2	0.6	0.5
Waiting Time	Less than 15 Minutes	53.2	82.4	41.3	3.6	33.3	43.6	42.9
	15 minutes - 30 Minutes	33.3	17	56.3	70.3	55.8	47.3	46.7
	31 minutes - 45 Minutes	9.9	0.6	2.5	22.4	9.7	9.1	9.0
	More than 45 Minutes	3.5	0	0	3.6	1.2	0	1.4

2.2.2.2 Healthcare expenditure by e-Sanjeevani users

The study results indicated that a significant proportion of the beneficiaries incurred minimal expenses on average during their visits to the healthcare facilities. In terms of the average amount of money spent per visit, 42% of respondents across states reported spending Rs. 100 or less, with a higher percentage of users in West Bengal (58.2%), Tripura (48.5%) and Uttarakhand (44.8%) reporting the same. A small percentage (15.2%) of respondents spent between Rs. 101 and Rs. 500 per visit, with the highest proportion of such users being observed in Uttarakhand (29.7%) and Tripura (27.9%). Overall, very few users (0.3%) spent more than Rs. 500 per visit to the teleconsultation centre. Around 42.5% of the e-Sanjeevani users across the states reported that they did not incur any out-of- pocket expenditure during their healthcare visits. A considerable number of those beneficiaries belonged to Gujarat (64.9%), Karnataka (60.6%) and Madhya Pradesh (50.6%) experiencing the benefit of free teleconsultation services. This may be attributed to variations in the implementation of e-Sanjeevani across the states. (Table 13)

In terms of transportation expenses, many of the respondents (48%) reported spending a hundred rupees or less on transportation to the nearest teleconsultation centre. This was closely followed by 45% of the beneficiaries who reported not having incurred any expenditure related to transportation. Very few respondents disclosed having spent more than three hundred rupees on travel to the e-Sanjeevani centre. (Table 13)

2.2.2.3 Time required per teleconsultation visit

Most of the respondents (78.3%) across states reported that their total visit time, including traveling, waiting, and consultation, was less than 1 hour. Karnataka had the highest proportion of users belonging (90.9%) to this category, followed by West Bengal (86.1%) and Gujarat (81.3%). Madhya Pradesh had the lowest proportion of beneficiaries (66.3%) in this category.

In terms of waiting time at the healthcare facility, a large proportion of beneficiaries (46.7%) reported a waiting time between fifteen to thirty minutes, followed by 42.9% of them noting that they waited for less than fifteen minutes to connect with the doctor providing the teleconsultation service. A small percentage of users (9%) reported a wait time between 31 to 45 minutes and a fraction of the users (1.4%) observed protracted waiting periods sometimes exceeding forty-five minutes.

Several users from Karnataka (82.4%) reported that the wait time was less than fifteen minutes, which was followed by users from Gujarat (53.2%) and West Bengal (43.6%), reporting the same. Several users from Tripura (70.3%) and Madhya Pradesh (56.3%) faced a waiting time between 15 minutes and 30 minutes. Tripura (22.4%) had the highest percentage of users who noted waiting between 31 minutes and 45 minutes before connecting with the specialist placed at a higher centre. Beneficiaries from Tripura (3.6%) and Gujarat (3.5%) reported a waiting time of more than 60 minutes. Prolonged waiting times were due to several reasons such as poor network connectivity, unavailability of the specialists at higher centres and several requests to connect with the healthcare provider simultaneously. (Table 13)

2.2.3 Awareness of and Experience with e-Sanjeevani OPD Application

More than half (66.2%) of the e-Sanjeevani beneficiaries interviewed were aware of the e-Sanjeevani OPD application, with 39.9% of them having prior experience with its usage. Most of the respondents (92.4%) who had prior experience with using the e-Sanjeevani OPD application reported that it was easy to utilize with a user-friendly interface. Almost all the beneficiaries from Karnataka (99.4%) and a significant portion of users from West Bengal (80.6%) and Uttarakhand (79.4%) were aware of the application. It is note-worthy, that despite high awareness levels in West Bengal and Uttarakhand less than half of the beneficiaries (35.3% and 45% respectively) reported using the application to avail teleconsultation services. Karnataka however, boasted a high level of utilization of the e-Sanjeevani OPD application with nearly all of those who were aware (97.6%) also utilizing the service. Tripura and Madhya Pradesh exhibited poor levels of awareness with a small proportion of the users (35.8% and 41.9% respectively) disclosing cognizance of the application. Tripura had the lowest percentage (5.1%) of users with previous experience of having utilized the e-Sanjeevani OPD application.

The e-Sanjeevani OPD application was deemed user-friendly and easy to use by the majority of the beneficiaries (92.4%). A large proportion of the users from Tripura (100%), Uttarakhand (96.6%) and Karnataka (95%) felt that the app was user-friendly. In comparison, only 78% of beneficiaries from Gujarat expressed a similar sentiment regarding the application's ease of use. (Table 14)

Table 14: Distribution of users based on Awareness of and Experience with e-Sanjeevani OPD Application

Indicators	GJ	KA	MP	TR	UK	WB	India
Awareness and Usage of e-Sanjeevani OPD Application							
% of Users who were aware of e-Sanjeevani OPD application	60.2	99.4	41.9	35.8	79.4	80.6	66.2
% of Users who have prior experience with Utilization of the e-Sanjeevani OPD application	39.8	97.6	16.4	5.1	45	35.3	39.9
User Experience and Ease of Use							
% of Users who felt that the app is user-friendly	78	95	90.9	100	96.6	93.6	92.4

2.2.4 Teleconsultation usage related to the COVID Pandemic

Studying teleconsultation services in the context of the COVID-19 pandemic is crucial as it has played a pivotal role in ensuring continuity of healthcare while minimizing the risk of virus transmission. The findings indicate that majority of users had their first teleconsultation after the COVID pandemic (92.9%) followed by a small fraction of them who used teleconsultation services before (4.7%) and during (2.4%) the COVID pandemic. All (100%) of the beneficiaries from Karnataka and Tripura used e-Sanjeevani services after the end of the COVID pandemic. A significant percentage of the beneficiaries in Uttarakhand (94.5%), Gujarat (90.1%), West Bengal (89.7%) and Madhya Pradesh (83.1%) also reported the same. Among the users who utilized teleconsultation services for the first time before and during the pandemic a majority of them belonged to Madhya Pradesh (14.4%) and West Bengal (6.7%) respectively.

The preferences of patients for teleconsultation services post-COVID-19 pandemic was studied to understand the continued utilization of e-Sanjeevani services for remote healthcare services. A significant proportion of users in Madhya Pradesh (100%), Uttarakhand (88.9%), Gujarat (70.6%), and West Bengal (41.2%) expressed a preference for teleconsultation after the COVID pandemic. In West Bengal, a high percentage (58.8%) of users indicated a low preference towards teleconsultation after the pandemic. The findings underscore the role of teleconsultation services during the COVID-19 pandemic, revealing a shift in user behaviour with the majority embracing e-Sanjeevani in the post-pandemic period.

Table 15: Distribution of users according to Initial Usage and Post-COVID Preferences of e-Sanjeevani (in %)

Variables	Categories	GJ	KA	MP	TR	UK	WB	India
Time of First telemedicine consultation	Before the COVID pandemic	4.7	0	14.4	0	5.5	3.6	4.7
	During the COVID pandemic	5.3	0	2.5	0	0	6.7	2.4
	After the COVID pandemic	90.1	100	83.1	100	94.5	89.7	92.9

2.2.5 Utilization of e-Sanjeevani services

For a significant proportion of users, the main purpose for using teleconsultation was for regular check-ups to manage common ailments (70.6%). COVID-19 infection related teleconsultations accounted for a small portion (1.7%) of the utilization pattern, with 8.5% of users from West Bengal expressing a preference for it. Patients also used teleconsultation for other reasons (27.7%) like gastro-intestinal problems, Musculo-skeletal complaints and menstrual irregularities.

Teleconsultation was mostly used to seek advice and for the management of Non-Communicable Diseases (62.5%), other ailments (28.7%), and Communicable Diseases (8.8%). Users from Tripura (100%) exclusively used e-Sanjeevani services for the management of Non-Communicable Diseases, which was in contrast to Uttarakhand where only 14.6% of the e-Sanjeevani users utilized it for NCD consultations. Most patients from Gujarat (21.3%) used e-Sanjeevani services for consultations related to Communicable Diseases. Beneficiaries from Madhya Pradesh (76.9%) and Uttarakhand (71.3%) availed services for other conditions which included gastrointestinal complaints, musculo-skeletal disorders, allergies, reproductive and urinary tract infections. Gujarat had the highest percentage (64.9%) of first-time teleconsultations while Karnataka (7.3%) had the least. In Karnataka (92.7%) and West Bengal (73.9%) a large number of users came for follow-up visits. In-depth interviews with users revealed that they used telemedicine for availing treatment for a diverse range of health conditions such as skin ailments, cardiac concerns, abdominal discomfort, blood pressure fluctuations, and diabetes management. The consensus was that telemedicine proved effective in managing significant health issues, and users found it convenient and easily accessible.

As for the frequency of teleconsultations in the past year, the majority of respondents (89.8%) reported having less than five teleconsultations. Tripura (100%) and Gujarat (97.7%) had the highest proportion of patients in this category, while Uttarakhand had the highest number (24.8%) of individuals who had consulted 5 to 10 times. e-Sanjeevani users from Karnataka (4.2%) utilized the service more than 20 times. (Table 16)

Table 16: Distribution of users according to the Utilization of e-Sanjeevani services (in %)

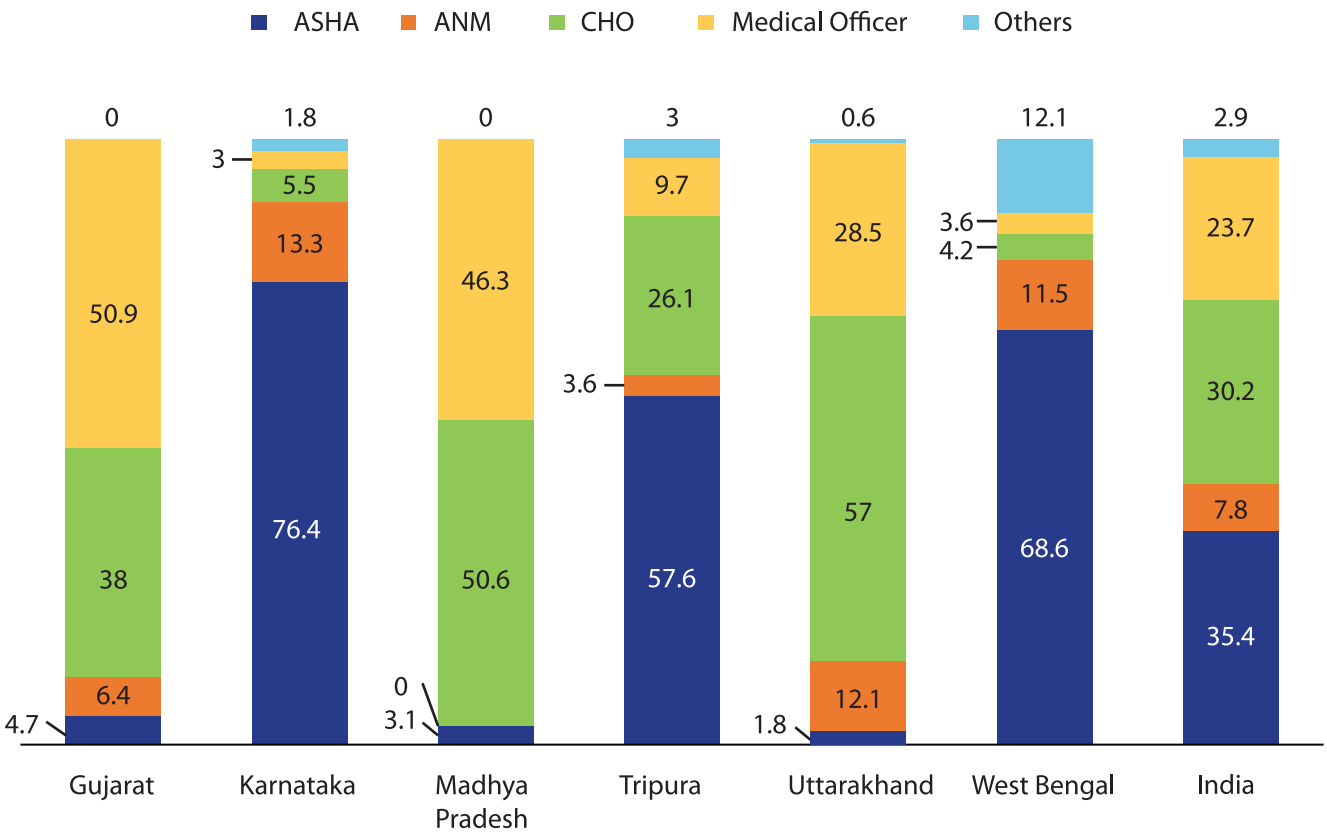
Variables	Categories	GJ	KA	MP	TR	UK	WB	India
Purpose of Teleconsultation	Regular check-up	91.8	51.5	98.1	40.6	71.5	70.3	70.6
	COVID-19 symptoms	1.2	0	0	0	0.6	8.5	1.7
	Others	7	48.5	1.9	59.4	27.9	21.2	27.7
Diseases for which Teleconsultation was done	Non-communicable diseases	71	77	20	100	14.6	92.1	62.5
	Communicable diseases	21.3	6.7	3.1	0	14	7.9	8.8
	Others	7.7	16.4	76.9	0	71.3	0	28.7
Teleconsultation Visits	First-Time Teleconsultation	64.9	7.3	40	52.7	33.9	26.1	37.5
	Follow-up Teleconsultation	35.1	92.7	60	47.3	66.1	73.9	62.5
Frequency of Teleconsultation in the past 1 year	Less than 5 times	97.7	87.9	91.9	100	73.3	87.9	89.8
	5 to 10 times	2.3	7.9	6.9	0	24.8	11.5	8.9
	10 to 20 times	0	0	1.3	0	1.8	0.6	0.6
	More than 20 times	0	4.2	0	0	0	0	0.7

2.2.6 Role of facilitators in encouraging utilization of e-Sanjeevani Services and Mode of Communication

The findings demonstrated that healthcare providers/facilitators played an important role in motivating and encouraging e-Sanjeevani users to utilize the service from their homes. Notably, it was primarily ASHAs (35.4%) who took the lead in promoting the use of e-Sanjeevani services from home, followed by Medical Officers (23.7%) and ANMs (7.8%). However, in Gujarat, Medical Officers played a significant role, motivating 50.9% of e-Sanjeevani users to access the service from their homes. Conversely, in Madhya Pradesh (50.6%) and Uttarakhand (57%), CHOs played a vital role in facilitating e-Sanjeevani users to utilize the services from their homes. Other facilitators such as Anganwadi workers, MPHWs, Lab Technicians, Data Entry Operators, and Yoga teachers had minor contributions in states like West Bengal (12.1%) and Tripura (3%). (Figure 10)

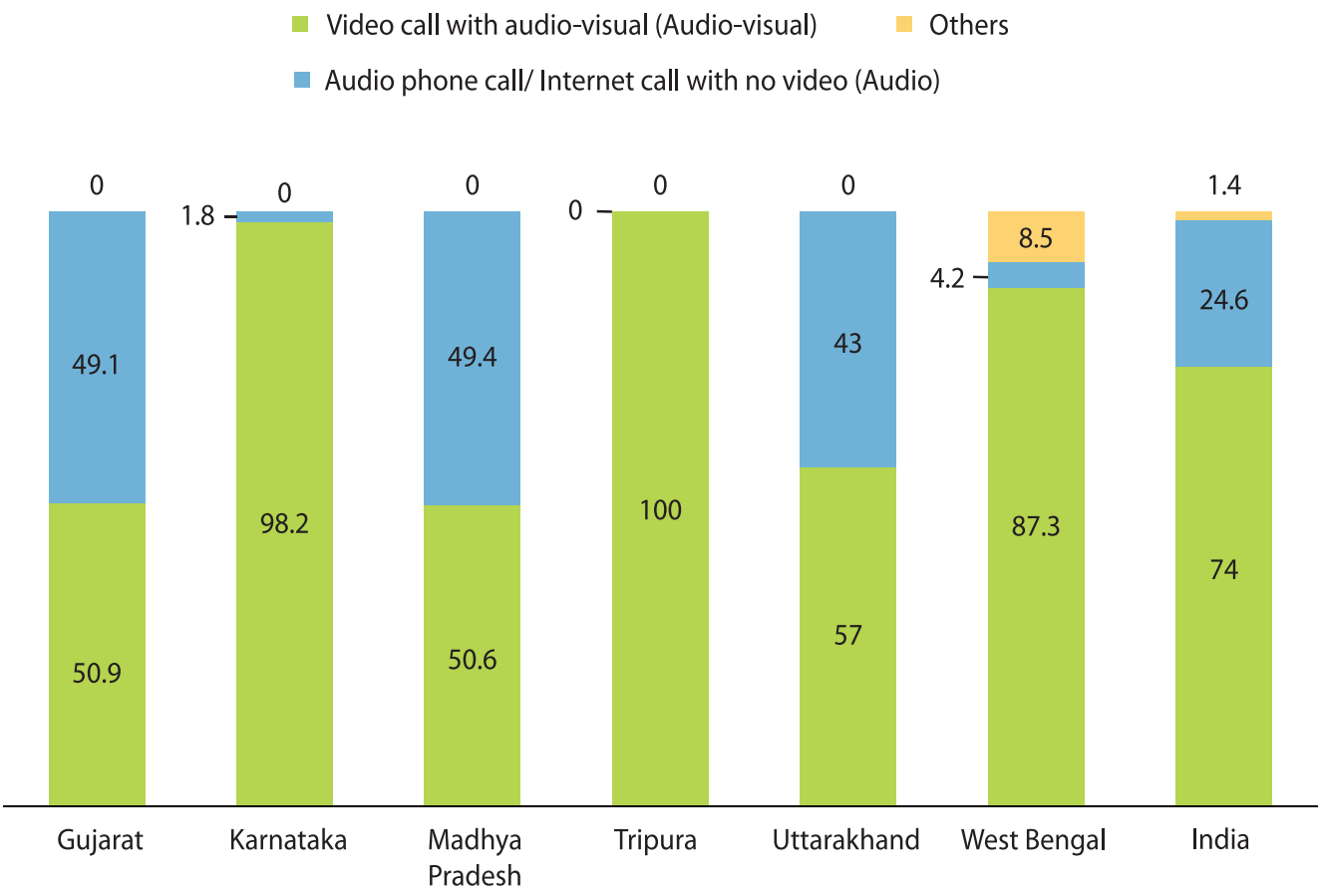
As per information gathered by in-depth interviews, users highlighted the instrumental role played by doctors, CHOs, and MOs in delivering and facilitating telemedicine services, and their satisfaction with this assistance was evident. While some attributed the facilitation of interactions with doctors or specialists at higher health facilities to CHOs/ANMs, others credited ASHAs for their involvement in orchestrating teleconsultation services. Irrespective of the specifics, users generally voiced contentment with the services they received. They appreciated the quality of medical guidance provided by doctors, which enabled them to promptly initiate necessary treatments.

Figure 10: Distribution of users based on Role of facilitators in encouraging utilization of e-Sanjeevani Services (in %)



Video calls with audio-visual capabilities were the primary mode of teleconsultation in most of the states, particularly in Tripura (100%), Karnataka (98.2%) and West Bengal (87.3%). Audio phone calls or internet calls without video were preferred by a significant portion of the respondents in Madhya Pradesh (49.4%), Gujarat (49.1%) and Uttarakhand (43%). Other modes of teleconsultation had minimal or no usage across the states. 8.5% of the users from West Bengal received teleconsultation through text messaging services like WhatsApp. (Figure 11)

Figure 11: Distribution of users according to the mode of teleconsultation (in %)



2.2.7 Reasons for Utilization of e-Sanjeevani services

Users of the e-Sanjeevani service indicated several different reasons for using teleconsultation, which differed significantly across states. They cited its money saving (56%), time-saving advantages (53.2%), healthcare provider recommendations (52.4%), greater satisfaction compared to face-to-face consultations (50.2%), lower exenditure compared to private hospitals (16%), and a minority mentioned other reasons (0.3%) for engaging in teleconsultation services. Notably, a large proportion of the beneficiaries from Tripura (98.2%) felt that teleconsultation services save time, while only 4.8% of those from Uttarakhand expressed the same. A significant percentage of the beneficiaries from Karnataka (92.7%) reported that teleconsultation saves money, showcasing its potential in reducing healthcare expenses. Most of the users belonging to Karnataka (91.5%) noted preferring teleconsultation over face-to-face consultations.

A considerable number of beneficiaries from Gujarat (76.6%) reported being recommended teleconsultation by healthcare providers, indicating that medical professionals also endorse its usage. Patients in Gujarat (46.8%) and Uttarakhand (34.5%) cited increased cost of services in private hospitals as a motivating factor for opting for teleconsultation. Few beneficiaries from Karnataka (1.2%) and Gujarat (0.6%) mentioned additional reasons for preferring e-Sanjeevani services which included communication of valuable health-related information and more effective care. (Table 17)

Table 17: Distribution of users based on Reasons for Utilization of e-Sanjeevani services

Reasons for utilization of e-Sanjeevani service	GJ	KA	MP	TR	UK	WB	India
% of users who found that teleconsultation saves time	19.3	89.7	12.5	98.2	4.8	94.5	53.2
% of users who found teleconsultation saves money	18.1	92.7	11.3	98.2	21.8	93.9	56.0
% of users who found teleconsultation more satisfactory than face-to-face consultation	26.9	91.5	25.0	69.1	10.3	78.2	50.2
% of users who were recommended teleconsultation by healthcare providers	76.6	8.5	82.5	48.5	53.9	44.2	52.4
% of users who opted for teleconsultation due to increased cost of consultation in private hospitals	46.8	0	14.4	0	34.5	0	16.0
% of users who mentioned other reasons for using teleconsultation	0.6	1.2	0	0	0	0	0.3

Findings of in-depth interviews showed that users appreciated its ability to save valuable time and financial resources, as well as its swift connectivity with doctors at advanced medical facilities. The convenience of receiving care within the comfort of one's home, coupled with the assurance of privacy and access to specialist insights, received commendation. Notably, users acknowledged telemedicine as a valuable resource for individuals from the comfort of their homes, notably the elderly who faced challenges in travelling long distances for in-person consultations.

2.2.8 Perception and Satisfaction with Teleconsultation

Examining user feedback is a necessary part of understanding the efficacy and acceptability of teleconsultation services. Overall, across the states, a majority of the users expressed the need for a physical check-up (71.6%) following teleconsultation. This was particularly the case in Madhya Pradesh (91.3%), and Uttarakhand (89.7%). Comparatively, less than half of the beneficiaries (38.8%) in West Bengal felt that face to face contact with the physician was required after teleconsultation. Users' satisfaction with e-Sanjeevani services was overwhelmingly positive (96.2%). All of the users (100%) belonging to Karnataka and Uttarakhand and a significant portion of those from Madhya Pradesh (99.4%), West Bengal (97%), Tripura (95.2%), and Gujarat (85.4%) reported being satisfied with the care received for their medical concerns.

Overall, a high percentage of users (73.8%) were willing to recommend e-Sanjeevani services

to others. Most of the users from Karnataka (100%) and West Bengal (92.1%) expressed their willingness to recommend e-Sanjeevani services to others. A relatively low percentage of users from Gujarat (39.8%) and Madhya Pradesh (38.1%) were willing to recommend teleconsultation services to others. The majority of users (87%) felt that their privacy was protected during the teleconsultation procedure, with most of the patients from Karnataka (97%), West Bengal (93.3%) and Madhya Pradesh (91.9%) expressing the same. (Table 18)

Table 18: Distribution of users based on Perception and Satisfaction with Teleconsultation

Perception and Satisfaction with Teleconsultation	GJ	KA	MP	TR	UK	WB	India
% of users who felt the need for a physical check-up after teleconsultation	72.5	70.9	91.3	66.1	89.7	38.8	71.6
% of users who were satisfied with e-Sanjeevani services	85.4	100	99.4	95.2	100	97	96.2
% of users were willing to recommend e-Sanjeevani services to others	39.8	100	38.1	87.9	84.8	92.1	73.8
% of users who felt that privacy was maintained during the consultation	70.8	97	91.9	85.5	83.6	93.3	87.0

2.2.9 Prescription and Accessibility of Medicines and Diagnostics

Nearly all of the beneficiaries (87.7%) received prescriptions for medicines and diagnostic tests following their teleconsultation visit. The results showed that all of the beneficiaries belonging to Karnataka (100%), and a major part of those from Tripura (98.2%), Uttarakhand (97%), and West Bengal (97%) received a prescription for either medicines or diagnostic tests that were prescribed during the teleconsultation visit. The mode of prescription varied among states, with a little more than half (53.3%) of respondents indicating the receipt of handwritten prescriptions from healthcare providers or facilitators at the healthcare facility. This was followed by other prescription formats like printed copies (36.1%), WhatsApp messages (8.8%), verbal communication (0.5%) and emails (0.1%). Few of the users (1.2%) reported receiving the prescription directly through the e-Sanjeevani application. Most of the users from Uttarakhand (88.8%), Tripura (79.0%), Madhya Pradesh (70.5%), and Gujarat (54.5%) reported receiving a hand-written prescription. Printed prescriptions were given to users after teleconsultation in West Bengal (75.6%) and Gujarat (45.5%). 52.7% of the patients in Karnataka received the prescription directly on WhatsApp. Other formats, such as email (0.1%) and verbal communication (0.5%), had minimal representation across the states.

Significant disparities became apparent with regards to the ease of availability of medicines across the states, with a majority of respondents (90%) affirming easy availability, a smaller fraction reporting occasional availability (7%), and a minority facing the challenge of non-

availability (3%). Notably, all of the respondents in Uttarakhand (100%) and a substantial portion of those from Madhya Pradesh (99.2%) reported that the prescribed medicines were easily available, reflecting the efficacy of local healthcare systems. In contrast, several respondents from Tripura (8.6%) noted that the prescribed medicines were not easily available, underscoring that despite teleconsultation, the treatment is not adequately available in this region. Users from West Bengal (3.1%) and Gujarat (2.3%) also reported facing difficulties in accessing the prescribed medication.

In the majority of states, public healthcare facilities (81.6%) served as the primary source for medicines. This was reported by a majority of the patients from Karnataka (92.7%), Gujarat (91.8%), Madhya Pradesh (91.3%), and West Bengal (88.5%). Private pharmacies and chemist shops played a smaller role overall (24.7%), although their usage was notably higher in the states of Karnataka (74.5%) and Tripura (46.1%).

More than half (55.8%) of the users in all states were advised to get diagnostic tests done after teleconsultation. Several respondents from Tripura (79.0%), Karnataka (75.2%), and Uttarakhand (60.6%) were required to get diagnostic testing after the healthcare visit. Among those who were advised to undergo diagnostic tests, the majority of them got tested at government healthcare facilities (85.9%). This was especially reported among users in Karnataka (97.6%), Madhya Pradesh (96.1%), Tripura (96.1%) and Uttarakhand (94.8%). Private diagnostic centres or labs were utilized less frequently (6.6%), and this was primarily observed in Gujarat (24.3%). A small portion of the users had not availed diagnostic testing at the time of the interview with this being the case among users from Gujarat (35.1%) and West Bengal (9.5%). (Table 19)

Table 19: Distribution of users according to Prescription and Availability of Medicines and Diagnostics after Teleconsultation (in %)

Variables	Categories	GJ	KA	MP	TR	UK	WB	India
Prescription given for Medicines/ Diagnostics	Yes	51.5	100	82.5	98.2	97	97	87.7
	No	48.5	0	17.5	1.8	3.0	3	12.3
Format in which the Prescription was given	Hand-written	54.5	3	70.5	79	88.8	23.8	53.3
	Printout	45.5	34.5	28.8	21	11.3	75.6	36.1
	Email	0	0	0	0	0	0.6	0.1
	WhatsApp	0	52.7	0	0	0	0	8.8
	Informed verbally	0	2.4	0.8	0	0	0	0.5
	Others	0	7.3	0	0	0	0	1.2

Variables	Categories	GJ	KA	MP	TR	UK	WB	India
Availability of Prescribed Medicines	Available	97.7	60	99.2	88.3	100	95	90.0
	Not available	2.3	3	0.8	8.6	0	3.1	3.0
	Sometimes available	0	37	0	3.1	0	1.9	7.0
Source of the Medicines	Government healthcare facility	91.8	92.7	91.3	82.4	43	88.5	81.6
	Private Pharmacy	8.8	74.5	0	46.1	6.1	12.7	24.7
Diagnostic Tests Advised	Yes	42	75.2	38.6	79	60.6	39.4	55.8
	No	58	24.8	61.4	21	39.4	60.6	44.2
Prescribed Diagnostic Tests were availed at	Government health facility	40.5	97.6	96.1	96.1	94.8	90.5	85.9
	Private Diagnostic Centre/ Lab	24.3	2.4	3.9	3.9	5.2	0	6.6
	Not done yet	35.1	0	0	0	0	9.5	7.4

2.2.10 Knowledge/ Awareness

Awareness and familiarity with telemedicine vary among individuals, many have come across the concept through sources such as doctors, ANMs (Auxiliary Nurse Midwife), CHOs (Community Health Officers), and various healthcare providers. The majority of users had their first experience with telemedicine in 2022, often facilitated by doctors. One respondent shared, "Doctors informed me about this in 2022." Nevertheless, only half of the participants were acquainted with e-Sanjeevani services. Specific mentions of the e-Sanjeevani OPD application were made by certain respondents, highlighting it as a distinct telemedicine platform they had utilized. A common thread among those who engaged with e-Sanjeevani was the user-friendly nature of the platform. As one user expressed, "Yes, I have heard about it, and it was a good experience." Particularly in West Bengal, users displayed a notable awareness of and active engagement with e-Sanjeevani. They found it invaluable in expanding healthcare accessibility, enabling hassle-free consultations with specialists from the comfort of their homes. The time- saving aspect was emphasized, as it obviated the need for arduous travel or enduring lengthy queues for in-person doctor visits.

2.2.11 Challenges

There are several challenges associated with telemedicine. Some users have experienced longer waiting times and network connectivity issues, while others have mentioned a lack of specialists in certain areas. Additionally, some individuals find it difficult to navigate smartphone applications for telemedicine consultations. Despite these challenges, many people appreciate the convenience of telemedicine, as it saves them time and money, allowing them to receive medical care from the comfort of their homes. However, a preference for face-to- face consultations remains, especially for physical examinations and chronic conditions. One of the main concerns voiced by those who prefer in-person visits is the lack of visual interaction in telemedicine, which they believe could lead to potential inaccuracies in diagnosis. They have also emphasized the importance of having doctors from various specialties available at the hub level for telemedicine consultations.

> Waiting time is more, internet problem, specialist related to my cardiac issues is not available, only those can use it who have good understanding of smartphone.

2.2.12 Enablers and Barriers

Telemedicine offers a range of benefits, including cost and time savings, as well as access to specialized consultations. As per findings from in-depth interviews conducted among e-Sanjeevani users, they noted that it is particularly convenient, especially for the elderly, enabling them to consult doctors for minor health concerns without the need for travel. Users highlighted that knowing doctors' schedules and available consultation days would be even more advantageous. Overall, they felt that their privacy was well-maintained and confidentiality wasn't an issue. However, some downsides were also voiced. Longer waiting times and the limitation on physical examinations were noted concerns. Participants acknowledged the absence of face-to-face interaction but generally believed that telemedicine services effectively safeguarded privacy. Connectivity emerged as a recurring problem, causing missed opportunities to consult specialists. Furthermore, there were those who lacked mobile phones, internet access, or digital literacy, rendering them unable to utilize telemedicine services.

2.2.13 Suggestions

The data underscores the growing popularity of telemedicine, as an increasing number of individuals appreciate its convenience and accessibility. Nonetheless, there remains a section of the beneficiaries who recognize the merits of in-person consultations, particularly for specific scenarios. Some individuals have voiced concerns such as connectivity issues, prolonged waiting times, and insufficient infrastructure that have dissuaded them from engaging with e-Sanjeevani services. Users have emphasized the importance of augmenting e-Sanjeevani's personnel pool and streamlining wait times for doctor consultations as pivotal steps to enhance demand for these services. Furthermore, the expansion of medical facilities and ensuring frequent doctor availability for telemedicine were pinpointed as essential prerequisites to bolster e-Sanjeevani utilization as well as availability of medicines at the

health facility where teleconsultation is being facilitated, "prescribed medications should be available". They also noted that the CHO/ANM communicate the chief complaints of the patients to the Hub doctor via messages. They were desperate about the mode of teleconsultation. They prefer to see the doctor at least through video calls and prescribe the medicines for them. They also suggested different staff and room for telemedicine, "There should be different staff and room for telemedicine".

2.3 Non-users

2.3.1 Socio-demographic details

The study included 996 participants who had no previous experience with telemedicine services. The mean age of the participants was 43 years. Most of the non-users (45.8%) belonged to the age group of 18 to 39. The elderly age group (≥ 60 years) constituted 19.9% of the non-users. Gender distribution among those who were interviewed was fairly even with 50.2% being male and 49.8%, female.

The participants belonged to a diverse range of educational backgrounds - 31.6% had attained a secondary education level, 29.5% had completed primary education, 15.5% had achieved higher secondary education, 5.5% held graduation degrees, and 0.6% reported post-graduate degrees. A small percentage of the non-users (17.2%) reported that they did not receive formal education. More than half of non-users (63.7%) of the respondents, were not engaged in any employment at the time of the interview. Thirty-six percent of the participants were employed, with most of them working in agriculture (46.8%). Over half of the non-users (58.4%) reported earning a monthly household income of around 10,000 rupees, and only a small fraction (0.4%) earned more than 50,000 a month. (Table 20)

Table 20: Socio-demographic characteristics of non-users

Variables	Categories	Frequency (N)	Percentage (%)
Age	18 to 29 years	229	23
	30 to 39 years	227	22.7
	40 to 49 years	179	18
	50 to 59 years	163	16.4
	60 years and above	198	19.9
Gender	Male	500	50.2
	Female	496	49.8

Variables	Categories	Frequency (N)	Percentage (%)
Educational status	No schooling	171	17.2
	Primary	294	29.5
	Secondary	315	31.6
	Higher secondary	154	15.5
	Graduation	55	5.5
	Post-graduation	6	0.6
	Others	1	0.1
Employment status	Employed	359	36
	Unemployed	634	63.7
	Retired	3	0.3
Current profession	Farmer	168	46.8
	Government Employee	10	2.8
	Business / Self - employed	107	29.8
	Others	74	20.6
Monthly household income	10000 or less	582	58.4
	10001 – 30000	395	39.7
	30001 – 50000	15	1.5
	More than 50000	4	0.4
Total		**996**	**100**

2.3.2 Accessibility to and Experience of Teleconsultation

2.3.2.1 Access and Transportation to e-Sanjeevani centre

Access to e-Sanjeevani centres varied across states, with some states showing a higher concentration of respondents residing near the facilities, while others had a larger proportion of respondents living at greater distances. In all states, including Gujarat (78.9%), West Bengal (63%), Karnataka (58.2%), and Madhya Pradesh (54.1%), participants reported living within a distance of less than one kilometre from the health facilities. However, a higher percentage of respondents reported living at a distance of more than five kilometres from the teleconsultation facility in Karnataka (11.5%) and Madhya Pradesh (8.2%).

Regarding transportation preferences, respondents from Gujarat (72.9%) and Madhya Pradesh (55.9%) indicated a preference for walking to reach the nearest healthcare facility. In West

Bengal (44.2%), Tripura (37%), and Uttarakhand (20%), public transportation was the favoured mode of transportation. A portion of participants in specific states opted for personal vehicles, with Uttarakhand (53.9%), Karnataka (47.3%), and Madhya Pradesh (37%) displaying varying proportions of this choice.

2.3.2.2 Expenditure

By leveraging teleconsultation, individuals can consult healthcare professionals remotely, eliminating the need for physical transportation and associated costs. Participants from Gujarat (29.5%), Karnataka (60.6%), Madhya Pradesh (40.6%), Tripura (49.7%), Uttarakhand (72.1%), and West Bengal (49.1%) reported spending Rs. 100 or less on average per visit to healthcare facilities. A smaller percentage (6.1%) of respondents mentioned spending between Rs. 101 and Rs. 300 per visit, and this was mainly observed in Uttarakhand (7.9%) and Madhya Pradesh (7.1%). Few respondents across states like Gujarat (0.6%) and Karnataka (1.3%) reported expenditure of above Rs.300. On average, 43.3% of all respondents across the states mentioned that they incurred no expenses during their healthcare visits.

Overall, 19.6% respondents across the states experienced travel related out of pocket expenditure. In Gujarat, a low percentage of respondents (24.1%) reported spending Rs. 100 or less on transportation for healthcare visits, while Karnataka had a higher proportion (58.8%) in this category. Non-users who spent more than Rs. 501 on transportation was negligible across most states, except for Uttarakhand, where 4.2% of non-users reported such expenses. Study participants from Gujarat (61.4%) and Madhya Pradesh (51.2%) reported zero transportation expenses.

2.3.2.3 Time Required per Teleconsultation Visit

Many respondents (76%) in all states reported that the average duration spent per healthcare visit, including traveling, waiting, and consultation time, was less than 1 hour. Non-users from West Bengal (89.7%), Karnataka (84.3%), and Tripura (81.8%) reported total time spent on getting in-person consultation to be less than an hour. Respondents belonging to Madhya Pradesh (31.8%) and Uttarakhand (49.7%) reported a visit time of 1 hour to 3 hours. Very few respondents reported visit times exceeding 5 hours which was the case in Karnataka (2.4%) and Gujarat (1.8%).

2.3.2.4 Waiting Time

Half of the respondents (51.6%) reported waiting for fifteen to thirty minutes on average to meet with the doctor for consultation. Thirty-nine percent of the nonusers noted very short waiting times which were less than fifteen minutes in duration. Non-users from Karnataka (73.3%), Gujarat (44.6%), West Bengal (40.6%) and Madhya Pradesh (40%), reported waiting for less than 15 minutes at the healthcare facility. In Tripura (21.8%) the patients had to wait from 31 to 45 minutes before each consultation. A small proportion (1.0%) of respondents reported waiting for longer periods like more than 45 minutes particularly in Gujarat (4.2%).

There is a potential benefit of telehealth initiatives in reducing waiting times for healthcare services, particularly for those availing in-person consultation who experienced longer waiting periods.

Table 21: Distribution of non-users based on the Accessibility to and Experience of teleconsultation (in %)

Variables	Categories	GJ	KA	MP	TR	UK	WB	India
Access and Distance								
Distance between the health facility and home	Less than 1 Km	78.9	58.2	54.1	38.8	27.9	63	53.5
	1 to 3 Km	16.3	15.8	33.5	44.2	61.2	18.3	31.6
	3 to 5 Km	1.8	14.5	4.2	15.8	6.7	14.5	9.6
	More than 5 Km	3	11.5	8.2	1.2	4.2	4.2	5.4
Travelling time	Less than 15 Minutes	70.5	66.1	42.4	23	32.7	47.9	47.1
	15 to 30 Minutes	21.1	20	53.5	46.1	37.6	36.4	35.8
	31 to 45 Minutes	6.6	7.3	3.5	29.1	26.1	13.3	14.3
	46 Minutes - 1 Hour	0	4.2	0.6	1.8	3	1.2	1.8
	More than 1 Hour	1.8	2.4	0	0	0.6	1.2	1.0
Transportation								
Mode of Transportation	Walk	72.9	34.5	55.9	38.8	26.1	47.9	46.0
	Public transport	11.4	18.2	7.1	37	20	44.2	23.0
	Personal vehicle	15.7	47.3	37	24.2	53.9	7.9	31.0
Expenditure								
Average amount of money spent per visit to the healthcare facility	Rs. 100 or less	24.1	58.8	33.5	44.8	58.8	46.7	44.5
	Rs. 101 to Rs. 500	13.9	7.9	15.3	12.7	24.8	6.6	13.5
	More than Rs. 501	0.6	0	0	0	4.2	0	0.8
	No expense	61.4	33.3	51.2	42.5	12.2	46.7	41.2

Variables	Categories	GJ	KA	MP	TR	UK	WB	India
Transportation Expenses	Rs. 100 or less	29.5	60.6	40.6	49.7	72.1	49.1	50.3
	Rs. 101 - Rs. 300	5.4	4.8	7.1	6.7	7.9	4.8	6.1
	Rs. 301 – Rs. 500	0	1.3	0	0	0	0	0.2
	More than Rs. 500	0.6	0	0	0	0	0	0.1
	No expense	64.5	33.3	52.3	43.6	20	46.1	43.3
Time required per teleconsultation visit								
Average Time required per visit (travelling time, waiting time, consultation time)	Less than 1 hour	86.7	84.3	67.1	81.8	46.7	89.7	76
	1 hour - 3 hours	9.7	12.7	31.8	18.2	49.7	7.9	21.7
	More than 3 – 5 hours	1.8	0.6	1.2	0	3.6	2.4	1.6
	More than 5 hours	1.8	2.4	0	0	0	0	0.7
Waiting Time	Less than 15 Minutes	44.6	73.3	40	7.9	30.3	40.6	39.5
	15 minutes – 30 Minutes	47	20	58.8	69.7	60.6	53.3	51.6
	31 minutes – 45 Minutes	4.2	6.7	1.2	21.8	7.3	6.1	7.9
	More than 45 Minutes	4.2	0	0	0.6	1.8	0	1.0

2.3.3 Knowledge and Awareness of Telemedicine

Data was gathered using in-depth interviews to understand the knowledge and awareness of teleconsultation services and e-Sanjeevani among telemedicine non-users. The majority of individuals who hadn't used telemedicine services were largely unaware of the existence of e-Sanjeevani OPD/teleconsultation/telemedicine. In fact, most non-users had not even encountered the term "e-Sanjeevani." Among those who had some knowledge of e-Sanjeevani, their awareness primarily stemmed from Community Health Officers (CHO) or Auxiliary Nurse Midwives (ANM), and in some instances, from conversations with doctors. Despite having a general familiarity with the concept of telemedicine, it was seldom embraced due to reservations about its efficacy in providing comprehensive guidance. The consensus among non-users was that in-person, face-to-face consultations held a superior standing compared to telemedicine. This viewpoint was predominantly influenced by the belief that physicians could offer more accurate diagnosis and provide sound advice and guidance through direct, in-person interactions. This preference for in-person consultation was rooted in the notion that physical presence enabled doctors to better evaluate symptoms and offer more effective recommendations, thus shaping the prevailing perspective against telemedicine utilization.

2.3.4 Awareness of the e-Sanjeevani OPD Application

The study assessed the awareness among non-users of the e-Sanjeevani OPD Application as it is essential to ensure equitable access to healthcare services, enhance adoption rates, and tailor strategies to promote the informed usage of telemedicine platforms. The awareness of the e-Sanjeevani OPD application among non-users was reported to be low overall (3.1%). More number of non-users from Tripura (6.9%) West Bengal (4.7%) and Karnataka (3.7%) were atleast aware of the e-Sanjeevani OPD Application, compared to a small minority of non-users (1%) in Gujarat, Uttarakhand and Madhya Pradesh.

2.3.5 Service Utilization

As per the information gathered from in-depth interviews, several non-users felt that doctors are better able to diagnose patients accurately during in-person consultations. From the perspective of individuals who haven't yet adopted telemedicine, they believe that in-person medical consultations offer certain advantages over teleconsultations. According to them, being physically present allows doctors to make more accurate diagnoses, especially in emergency cases where immediate intervention is crucial. The community has been actively engaged in raising awareness about telemedicine platforms like "e-Sanjeevani," with ASHAs and sometimes doctors themselves taking the lead in educating people about these options.

However, these non-users feel that a significant portion of the elderly and women lack access to mobile phones and are unfamiliar with using the internet, making in-person consultations a more suitable choice for them. Furthermore, some respondents are not comfortable with using technology such as mobile phones and the internet, and therefore prefer in-person consultations where they can directly obtain prescriptions and medications from the health facility. The respondents believe that emergency cases cannot be effectively managed through teleconsultation and that immediate medical attention and intervention are crucial in emergency situations, which might be challenging to provide remotely. Some non-users believe that a significant portion of the elderly and women do not possess mobile phones or are unfamiliar with using the internet. This lack of technological access could make teleconsultation impractical or less effective for these individuals. Some respondents were

not familiar with using mobile phones or the internet. As a result, they may prefer in-person consultations as they perceive this approach as more straightforward and reliable.

> Face to-face treatment is good. In face-to-face treatment, doctors do check-ups in front of you
>
> **- Nonuser, AAM-PHC, Gujarat**

2.3.6 Reasons for non-utilization of e-Sanjeevani services

As discontinued use and non-use are two of the biggest challenges for long-term telemedicine implementation, it is important to identify barriers users face when using telemedicine applications, in order to improve the uptake of future interventions. The perceived lack of need emerged as the primary reason for non-utilization, with varying percentages being reported across the states. More than half of the non-users were from Tripura (66.7%), Madhya Pradesh (63.6%) and Uttarakhand (53.3%). Comparatively, a lesser proportion of the non-users belonged to Karnataka (45.9%), West Bengal (40.4%), and Gujarat (30%). Lack of confidence in teleconsultation, although not a significant factor in most states, was most evident in West Bengal (27.7%) Tripura (21.7%), and Uttarakhand (6.7%).

Unfamiliarity with teleconsultation (34.4%) was cited as the second most common cause for the non-utilization of services across the states. This was the main reason for non-utilization of services among the participants belonging to Gujarat (80%). Half the respondents from West Bengal (53.2%), and a lower proportion of those from Uttarakhand (20%), Karnataka (18.9%), Madhya Pradesh (18.2%) and Tripura (15.9%) gave similar reasons for not using e-Sanjeevani services. In-person consultation was highly favoured by 18.7% of the non-users and this was especially the case in the state of West Bengal (61.7%). A smaller proportion of the non-users from Gujarat (20%), Uttarakhand (13.3%), Madhya Pradesh (9.1%) and Karnataka (8.1%) preferred face-to-face care over e-Sanjeevani for the management of their medical concerns.

Some of the participants (12.1%) lacked the necessary technology such as was smartphones and data cards to access telemedicine services. It was cited as a barrier to utilization by respondents from Gujarat (20%), Karnataka (16.2%), Uttarakhand (13.3%) and West Bengal (12.8%). The proportion of non-users with technology related barriers was low in Madhya Pradesh (9.1%) and Tripura (1.4%). Notably, non-users from Karnataka (13.5%) and Madhya Pradesh (9.1%) reported other reasons for not utilizing e-Sanjeevani, such as unavailability of prescribed medicines at the teleconsultation centre, language related barriers where the patients were unable to understand the healthcare providers, and concerns about quality of healthcare, while this was not reported in the other states.

Table 22: Distribution based on Reasons for Non-utilization of e-Sanjeevani among aware individuals

Reasons for non-utilization of e-Sanjeevani services	GJ	KA	MP	TR	UK	WB	India
% of non-users who perceived no need for utilizing the e-Sanjeevani service	30	45.9	63.6	66.7	53.3	40.4	50
% of non-users who lacked confidence in the reliability of teleconsultation	0	0	0	21.7	6.7	27.7	9.4
% of non-users who received advice from others not to use the service	0	0	0	1.4	0	0	0.2
% of non-users who were unfamiliar with the process of teleconsultation	80	18.9	18.2	15.9	20	53.2	34.4
% of non-users who had personal preference for in-person consultation	20	8.1	9.1	0	13.3	61.7	18.7
% of non-users who did not have the necessary technology such as a smartphone or data card	20	16.2	9.1	1.4	13.3	12.8	12.1
% of non-users who had other reasons for not using teleconsultation	0	13.5	9.1	0	0	0	3.8

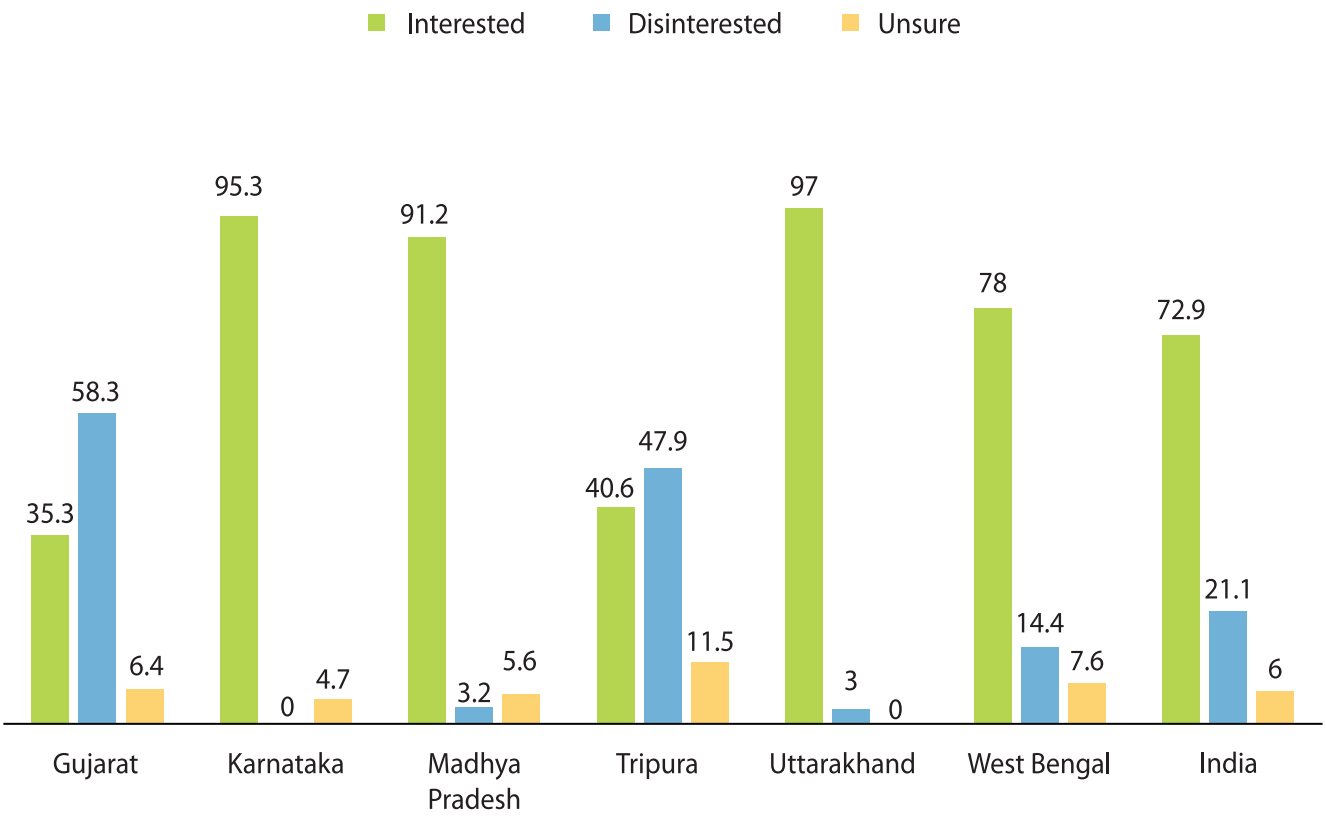
2.3.7 Potential Interest in Teleconsultation services

Gauging the potential interest that non-users have in utilizing teleconsultation services can be useful in determining whether or not they will be willing to adopt the service once their concerns are resolved. Overall, on average more than half of the non-users (72.9%) were receptive to the idea of using e-Sanjeevani in the future. The highest percentage of respondents who expressed potential interest in availing teleconsultation services was observed in the state of Uttarakhand (97%). This was closely followed by Karnataka (95.3%) and Madhya Pradesh (91.2%). A lower percentage of the respondents from Tripura (40.6%) and Gujarat (35.3%) were interested in availing teleconsultation services.

A fraction of the non-users (21.1%) displayed a lack of enthusiasm for the future adoption of teleconsultation, suggesting some reluctance among non-users to embrace this mode of healthcare. The proportion of such interviewees was noted to be higher in Gujarat (58.3%) and Tripura (47.9%). Non-users from Tripura (11.5%) and West Bengal (7.6%), respectively mentioned that they might consider teleconsultation once they have a clearer understanding of the process. A smaller segment of non-users appeared uncertain (6%) regarding their preferences related to the future use of teleconsultation. Strategies can be modelled to encourage the adoption of e-Sanjeevani services among those with potential interest in

e-Sanjeevani as a viable alternative to routine healthcare services. This could lead to the expansion of the reach of telehealth solutions and coverage of healthcare needs of the population.

Figure 12: Distribution of non-users based on Potential Interest in Teleconsultation services (in %)



2.3.8 Enablers and Barriers

According to the results from 66 in-depth interviews among nonusers, majority of them felt that embracing telemedicine services presents a number of benefits. Its main advantage lies in the convenience and accessibility it offers, which enables patients to consult healthcare professionals within their familiar surroundings and negating the need for travel or prolonged waiting times. Teleconsultations can yield considerable time and cost savings, which is particularly evident in reducing travel expenses and minimizing work disruptions. It bridges geographical gaps, facilitating access to specialized care for those residing in remote or underserved regions. This proves especially advantageous for managing chronic conditions, as regular virtual check-ups ensure consistent care without necessitating frequent in-person visits. During health crises like the COVID-19 pandemic, telemedicine becomes a crucial tool, mitigating the risk of contagion through reduced physical interactions.

However, alongside these advantages, telemedicine does present certain limitations. Foremost among these is the challenge of conducting physical examination of the patient which can lend itself to the accurate diagnosis and management of medical conditions.

Disparities in technological access can hinder its inclusivity, potentially marginalizing those without reliable internet connections or requisite devices. The absence of a personal touch is another noteworthy drawback, as telemedicine encounters may lack the depth of emotional connection and rapport fostered during in-person interactions. Privacy and security concerns surrounding the digital transmission of sensitive medical data underscore the importance of robust safeguards. The absence of hands-on assessments introduces the risk of misdiagnosis or inadequate treatment, as vital visual and tactile cues may go unnoticed. Navigating the regulations imposed as well as the licensing variations across different jurisdictions poses its own set of challenges in the use of telemedicine.

It is essential to recognize that telemedicine's effectiveness depends upon the nature of the medical issue and the calibre of the telemedicine platform. While it undoubtedly enhances convenience, access, and safety, it must be judiciously applied, considering both its advantages and limitations within the broader landscape of healthcare delivery.

2.3.9 Suggestions from non-users

Non-users of e-Sanjeevani indicated that there would be an increase in the utilization of telemedicine services provided that there is an improvement in awareness of such services among the general population. They suggested that awareness generation campaigns for telemedicine should be tailored to position it as an alternate avenue for to improve access to healthcare services. Within this viewpoint, some non-users emphasized the importance of disseminating information about services like e-Sanjeevani and advocated for comprehensive public outreach efforts to this end. Few non-users also highlighted the value of expanding the scope of telemedicine, particularly with respect to improvement in healthcare service delivery for pregnant women. A common sentiment expressed by a small subset of non-users was the need for a dedicated healthcare workforce, including both doctors and support staff, in order to effectively meet the demands and expectations of the people.

Non-users also cited the potential challenges related to telemedicine service delivery, including cases where technological access is limited, its usage in emergency situations, as well as the role that personal preferences play in terms of service utilization.

> Before starting a new treatment method, arrangements should be made to ensure that people are aware of it.
>
> **- Nonuser, AAM-SC, West Bengal**

Trend of e-Sanjeevani users based on Secondary Data in States

03

The examination of teleconsultation usage trends since 2019 required access to secondary data from the evaluated healthcare facilities. Although the study encompassed 60 spoke healthcare centers, only 44 of them were able to furnish secondary OPD data. The dataset from these 44 healthcare facilities spanned a 12-month period, commencing from January and concluding in December. The availability of this data depended on factors such as the introduction of the e-Sanjeevani service at the respective facility and the extent of documentation completion. However, it is worth noting that the data for the year 2022 had a more restricted time coverage. Specifically, the data encompassed January to March for 18 spokes, January to May for one spoke, and solely the month of January 2022 for another spoke. In contrast, the secondary data spanned from January to September, October, or November for 24 spokes.

3.1 Patient Load

The graph below presents the average patient count served by healthcare facilities spanning a duration of four years. The facilities are categorized based on their types: Primary Health Centre (PHC) and Sub-Health Centre (SHC). The data was sourced from physical documents collected directly from these facilities. As indicated in the graph, there was a decline in the number of patients served by both PHC and SHC facilities in the year 2019. Notably, the graph suggests that if the workload of PHCs is lessened post-2021, there would be a substantial surge in healthcare utilization subsequent to the upgrading of SHCs to Ayushman Arogya Mandir (AAM).

3.2 Telemedicine Status

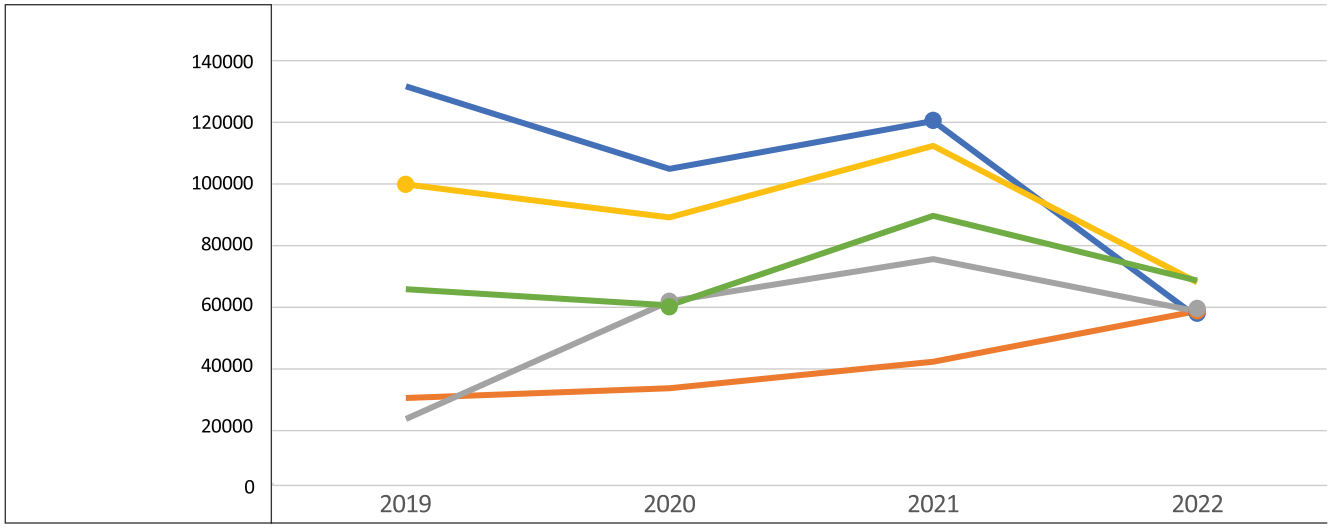
Only 32 out of the 44 healthcare facilities that submitted outpatient data in 2022 reported cases from e-Sanjeevani, as compared to 25 in 2021, 13 in 2020, and one in 2019 – chronologically representing the introduction of the e-Sanjeevani service at these facilities.

The database on e-Sanjeevani patients was sourced from maintained documentation at the centres. However, many facilities lacked comprehensive data, and neither the district nor the state had access to patient information via the e-Sanjeevani portal. Government officials have indicated that the responsibility for data upkeep lies with CDAC. However, access to CDAC statistics was not granted, thereby implying that the figure in the graph should be construed as reflecting the minimum growth in terms of utilization.

The count of patients served by Ayushman Arogya Mandir displayed some variations from 2019 to 2020. It slightly decreased in Gujarat, Tripura, and West Bengal, while an increase was observed in Madhya Pradesh and Karnataka. Conversely, Uttarakhand demonstrated minimal change in the number of patients served by AAM. In general, post-pandemic, the number of

patients attended to at AAM decreased in most states, with the exception of Uttarakhand, where the situation remained relatively steady, and Karnataka, which recorded an upsurge in the number of patients served. (Figure 13)

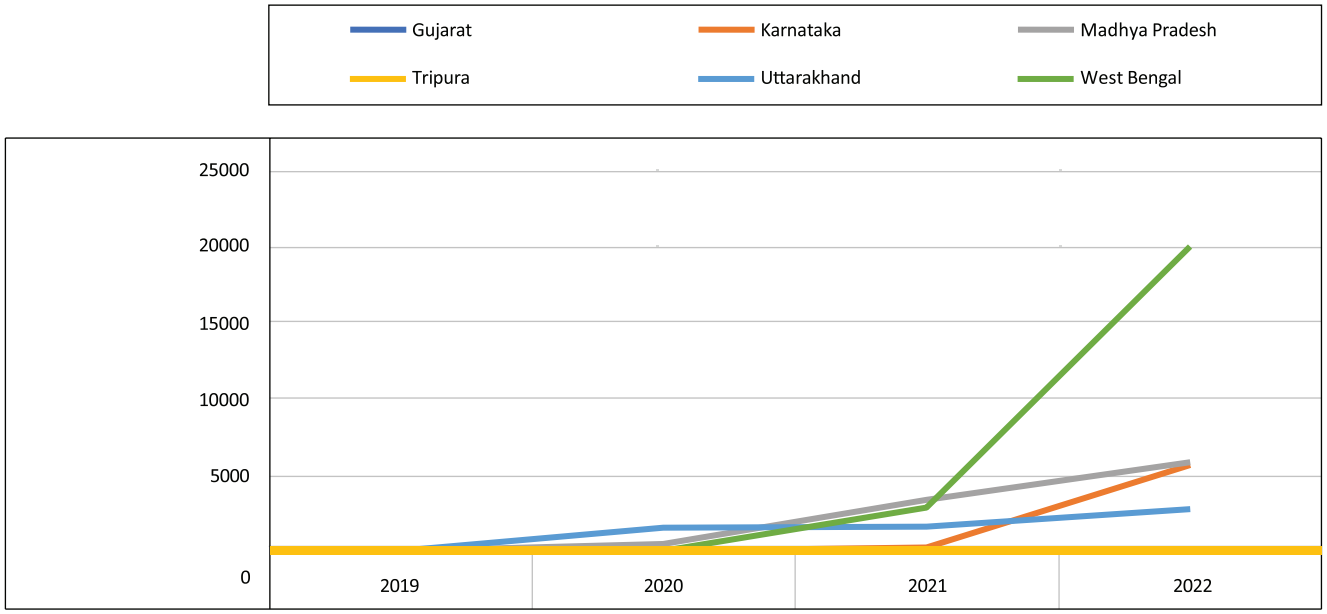
Figure 13: Number of patients served by type of facilities (2019 to 2022)



Gujarat	132064	104865	120616	56015
Karnataka	29330	32602	41343	58136
Madhya	22429	61346	75225	57958
Tripura	99788	88796	112474	67402
Uttarakhand	12805	14393	12312	12105
West Bengal	65224	59850	89466	68033

The data shows a rise in e-Sanjeevani cases in most states starting in 2020, indicating an increase in e-Sanjeevani utilization during the COVID-19 pandemic. Specifically, there was a significant 74% increase in e-Sanjeevani cases between 2021 and 2022, in contrast to a modest 2.8% growth observed between 2019 and 2021. There was a sharp increase in the number of patients served through teleconsultation by AAM particularly in West Bengal and Karnataka. The number of patients served through teleconsultation by AAM was quite low in Gujarat, Tripura and Uttarakhand as depicted in the graph. See Figure 14.

Figure 14: Number of patients served through teleconsultation by AAM during 2019-2022



Gujarat	22	331	693	744
Karnataka	0	0	234	5663
Madhya Pradesh	0	447	3371	5844
Tripura	0	0	0	263
Uttarakhand	0	1538	1597	2761
West Bengal	0	0	2838	19961

The number of health facilities reporting Telemedicine cases has increased significantly, from one in 2019 to thirty-two in 2022. This upward trend is also evident in the proportion of patient load, as indicated in Box 2 and Figure 14, which has shown an increase since 2019. According to the combined data, e-Sanjeevani cases accounted for only 0.01% of the total patient load in 2019 but have risen to over 10.8% in 2022. However, it's important to note that the data for 2022 is less than a year old. Furthermore, in comparison to PHC, the proportion of e-Sanjeevani users in SC has significantly climbed from 0.1% in 2019 to 28.2% in 2022. This increase can be attributed to the provision of more facilities and an overall growth in patient load. (Box 2)

Box 2: Trend in the institutions that started reporting teleconsultations & proportion of teleconsultation services offered out of total cases handled by the facilities

Year	% of e-Sanjeevani users			Facilities that had e-Sanjeevani service (%)		
	Combined	PHC	SC	Combined	PHC	SC
2019	0.01	NA	0.1	1	NA	1
2020	0.6	0.50	1.7	13	7	6
2021	1.9	0.55	7.9	25	9	16
2022	10.8	2.07	28.2	32	14	18

Source: Based on secondary data from the health facilities

Discussion 04

4.1 Healthcare Providers/ Facilitators

Regional variations were noted in the implementation of e-Sanjeevani across all the states. The findings indicated the critical role of infrastructure, including high-speed internet and compatible devices, in the success of teleconsultation services. The reliance on a mix of devices, with mobile phones being the preferred choice for most of the practitioners, exemplifies the flexibility of the telemedicine approach.

The e-Sanjeevani interface supports in-built video conferencing and text chatting. Some of the facilities utilized telephonic communication due to poor internet connectivity to facilitate teleconsultations. In areas where internet access is unreliable or bandwidth is limited, videoconferencing may not be feasible due to concerns such as call drops, lagging video streams, or overall poor audiovisual quality. Videoconferencing was favoured over telephone calls as it offered additional benefits such as visual cues, enhanced communication, and the ability to conduct more comprehensive assessments. Most of the healthcare providers valued both in-person and teleconsultations, yet a significant proportion still preferred in-person visits. This is likely attributed to factors such as the need for physical examinations, concerns regarding technology reliability, and patient preferences for personal connection and hands-on care.

The majority of the healthcare providers underwent training before engaging in teleconsultation services. Fewer facilitators reported having received formal training on telemedicine. The training was predominantly state-sponsored and was conducted in person. Most of the participants were satisfied with the content and type of training received. The preference for in-person training indicates a collective recognition of the importance of hands-on learning. Proper training ensures that practitioners understand the technical aspects of telemedicine platforms, maintain patient confidentiality, and communicate effectively via digital channels.

Healthcare providers interviewed during the study noted that beneficiaries primarily utilized teleconsultation for initial appointments, with fewer opting for follow-up consultations. As non-communicable diseases were the most common health condition for which teleconsultations were done, it would be worth exploring the expansion of its usage for follow- up consultations. It would improve continuity of care for patients with chronic conditions, ensuring regular monitoring and timely adjustments to treatment plans.

The challenges faced by healthcare providers and facilitators were significant and encompassed issues such as compromised internet connectivity, prolonged waiting times, lack of dedicated staff, and insufficient infrastructure. To tackle these challenges, various solutions were identified, such as enhancing telecommunication network capabilities, streamlining teleconsultation processes, allocating dedicated staff for e-Sanjeevani services, and improving public awareness through outreach activities and campaigns.

4.2 Users/ Non-users

The experiences of the telemedicine users and non-users were studied which provided insights into their perspectives, barriers and enablers. Most of the users lived within close proximity to the teleconsultation centres. This ensures access to teleconsultation services including access to specialist care through the e-Sanjeevani platform (Doctor-to-Doctor). Non-users demonstrated variations in access to the nearest healthcare facility, with a small percentage of them residing more than five kilometres away. For individuals residing more than five kilometres away from healthcare facilities, accessing traditional in-person care can be challenging. The e-Sanjeevani OPD application offers a viable solution by enabling remote consultations, thereby bridging the gap in healthcare accessibility for those in remote locations.

Most of the users reported that they received teleconsultation services free of charge. Users incurred minimal expenses during healthcare visits, with most spending less than a hundred rupees on average per visit. Non-users reported similar expenditure patterns, with a majority of them receiving free in-person consultations or spending less than a hundred rupees on average per visit. Few of the non-users reported out-of-pocket expenditures exceeding three hundred rupees. Affordability did not emerge as a significant barrier to telemedicine utilization among non-users, suggesting that cost may not be a deterrent for adopting teleconsultation services.

Visit durations of less than an hour and short waiting times were reported by both telemedicine users and non-users. Though both groups faced similar time constraints, several reasons were cited by non-users for the non-utilization of teleconsultation services. A perceived lack of need, unfamiliarity with the IT platform, preference for in-person consultations, and absence of necessary technology, such as smartphones and data cards were the reasons indicated by the non-users. Addressing these factors at the facility level would promote the uptake of services among non-users, thereby ensuring more equitable healthcare access to the whole population.

Teleconsultation services were utilized for diverse health needs, including regular check-ups, for the management of common ailments, and COVID-19-related symptoms. The majority of consultations were done for Non-Communicable Diseases, with users expressing their satisfaction with the convenience and effectiveness of telemedicine. However, the frequency of consultations remained relatively low for most users, suggesting potential for further utilization and expansion of telemedicine services.

Significant disparities were noted between users and non-users in terms of knowledge and awareness levels. Several users were reportedly introduced to telemedicine by healthcare providers and facilitators. They demonstrated varying degrees of familiarity with platforms such as e-Sanjeevani, with some expressing positive experiences and emphasizing its user-friendly nature. In contrast, non-users exhibited a lack of awareness about telemedicine services, including e-Sanjeevani, with limited exposure to the concept primarily through CHOs or ANMs. Non-users were doubtful about the effectiveness of telemedicine as they felt that in- person consultations were best for obtaining accurate diagnoses. Further efforts are needed to address such misconceptions and enhance trust in telemedicine.

Users and non-users had varying perspectives about the benefits and challenges associated with remote healthcare delivery. Users acknowledged the convenience and cost savings offered by telemedicine but expressed concerns about longer waiting times, connectivity issues, and limitations in specialist availability. Non-users on the other hand recognized the potential advantages of telemedicine, particularly in improving accessibility to healthcare

services, but raised concerns related to the absence of physical examinations, disparities in the availability of the necessary technology at the patient level, and privacy-related concerns. Improvements such as augmenting personnel pools, streamlining wait times, and expanding awareness campaigns can help mitigate user concerns and encourage greater adoption. Efforts should be made to address privacy concerns by implementing robust safeguards, ensuring inclusivity through initiatives by the Government to improve access to technology, and expanding the scope of telemedicine services to cater to a broader range of healthcare needs. A comprehensive approach that addresses both user and non-user concerns is essential to optimize the effectiveness and accessibility of telemedicine services.

The study has demonstrated how the e-Sanjeevani initiative could potentially improve accessibility, improve service delivery and reduce out-of-pocket expenses. Continuous adaptation to meet evolving needs, addressing identified challenges, and understanding the perceptions of both users and non-users are crucial for the program's success and sustainability.

Strengths and Limitations

05

5.1 Strengths

Comprehensive methodology was employed to conduct the study including a well-planned sampling strategy, ensuring that the findings could be generalized. Repeated training sessions for field investigators, coupled with the meticulous implementation of quality assessment measures at each stage, enhance the credibility of the study.

5.2 Limitations

During the course of this study, we identified certain limitations. Specifically, a considerable number of healthcare facilities failed to maintain accurate and complete e-Sanjeevani records. This situation has impacted the integrity and completeness of the secondary data obtained, potentially introducing bias or diminishing the precision of the study's conclusions.

Inability to access data from CDAC (Centre for Development of Advanced Computing) posed a significant constraint. The state's communication that they lack access to this data, and that CDAC is the sole custodian, hampers a comprehensive analysis and may result in gaps in the study's findings.

Recommendations 06

Based on insights gathered from in-depth interviews and focus group discussions involving healthcare providers, facilitators, users, and non-users of telemedicine services, a consensus was reached with relation to the need to strengthen telemedicine services in India. While stakeholders from some of the states were pleased with the performance of this initiative thus far, a few of the respondents offered suggestions on how the program may be strengthened further for better utilisation of the teleconsultation services.

The recommendations aim to address specific challenges and explore opportunities in the context of telemedicine services in India, with the goal of making healthcare services more accessible and efficient:

- Telemedicine facilities should have the necessary infrastructure in place to guarantee the delivery of teleconsultation services.
- Measures to improve the internet connectivity at both the physician, facilitator and patient end is necessary to guarantee uninterrupted and reliable telemedicine consultations.
- The teleconsultation process has to be stream-lined to reduce waiting times and also to enhance the overall experience of the beneficiaries.
- Dedicated personnel should be designated specifically for the purpose of providing and facilitating teleconsultation services, in order to ensure effective consultations.
- Scarcity of Human resources, particularly specialists such as pediatricians, obstetricians and gynaecologists need to be addressed to broaden the range of services available.
- Comprehensive training must be provided to healthcare staff to equip with them with knowledge related to the e-Sanjeevani platform, to improve their technical proficiency and optimize the delivery of healthcare services.
- IEC activities such as outreach camps, door-to-door campaigns and advertisements to improve the awareness in the community on the availability and benefits of telemedicine services should be undertaken.
- The availability of medicines and diagnostic tests prescribed by the specialists through e-Sanjeevani at the telemedicine facilities should be ensured in order to remove the financial burden on patients while accessing healthcare services.

Conclusion

07

This comprehensive analysis provides valuable insights into the current state of telemedicine services, highlighting both its immense potential and the challenges that need to be addressed for its widespread adoption and success. Regional disparities in awareness and utilization emphasize the need for targeted interventions to ensure inclusivity and tailored support for different communities. The crucial role of telemedicine in bridging geographical gaps and providing essential healthcare services to remote areas cannot be overstated. It not only improves health outcomes but also addresses issues of equity and inclusivity in healthcare provision. At the organizational level, establishing adequate infrastructure and providing comprehensive training for frontline functionaries and CHOs are key factors for successful telemedicine implementation. Ensuring the completeness and accuracy of patient data is also an essential component for providing informed teleconsultations.

Refresher training on telemedicine is essential for keeping healthcare practitioners updated on evolving technological, ethical, and legal considerations. This ongoing learning equips them to navigate the dynamic landscape of telemedicine services effectively. Leveraging high levels of patient satisfaction as a catalyst for further adoption is a strategic approach. Building trust and reliability in telemedicine can drive increased demand, especially in underserved areas. Prioritizing technological advancements and addressing staffing shortages are critical steps in ensuring the seamless delivery of telemedicine services. Lastly, public awareness-building efforts are pivotal in fostering an accessible, inclusive, and technologically empowered healthcare landscape.

National Health Systems Resource Centre
Ministry of Health and Family Welfare
Government of India