

## Original Article

# Perception and Constraints of Telemedicine Services among the Health Care Providers and Beneficiaries in Purba Bardhaman District, West Bengal : A Qualitative Study

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**Background** : Telemedicine has emerged as a potential solution to the country's expanding healthcare needs, particularly in rural and isolated locations. This study tries to pinpoint challenges and offer suggestions for improving Telemedicine services in India.

**Aims and Objectives** : To explore perception and constraints of Telemedicine services among the health care providers and beneficiaries

**Materials and Methods** : A qualitative study with phenomenological approach was conducted in Purba-Bardhaman District, West Bengal from March, 2023-June, 2023. All tiers of health-care delivery system (from HWC to tertiary-care facility) with provision of Telemedicine services were selected by SRS. From selected facilities, beneficiaries (those attended  $\geq 2$  Telemedicine consultations) were chosen purposively for focused group discussion. Similarly, doctors and Community Health Officers (providing Telemedicine service for  $\geq 3$  months) were selected for In-Depth Interviews. Data analysis done by inductive thematic approach. Ethical clearance obtained from Institutional Ethics Committee.

**Results** : Lack of access to technology and infrastructure, resource constraints, limited training and support, resistance to change and adoption of new technology, challenges in maintaining patient privacy and confidentiality, administrative and managerial issue emerged as significant challenges from service-provider's perspective. Beneficiaries faced various constraints, which includes accessibility and availability of Telemedicine services, resource constraints, acceptability and trust issue, quality and effectiveness related issues.

**Conclusion** : Acceptance of Telemedicine service in India is hampering due to lack of infrastructure and essential medicine, inadequate manpower and unrealistic target from higher authorities. However increasing adoption of technology and Government initiatives will help to promote growth and development of Telemedicine.

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**Key words** : Beneficiary, Constraints, Health Care Provider, Health and Wellness Centre, Perception, Qualitative, Telemedicine.

Telemedicine, also known as "healing at a distance," was coined in the 1970s by the Thomas Bird<sup>1</sup>. One of the first recorded instances of telemedicine occurred in the early 20th century when Willem Einthoven<sup>2</sup> transmitted electro-cardiograph data over telephone wires to a hospital 1½ km away.

Newer applications of "Telemedicine" are found as time goes on and older applications take hold and find a larger reach. WHO defined telemedicine as 'the delivery of health care services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and

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### Editor's Comment :

- Telemedicine services if properly implemented can be a gamechanger in healthcare delivery system.

evaluation and for the continuing education of health care providers, all in the interest of advancing the health of individuals and their communities<sup>3</sup>.

Though telemedicine is still a nascent field in India, our country is making efforts to catch up with the developed world. In 2001, the Indian Space Research Organisation (ISRO) launched a test project that connected Chennai's Apollo Hospital with its rural counterpart in Aragonda village<sup>4</sup>.

However, these measures did not gain widespread adoption in India due to inadequate resources, slow policymaking at the national and state levels and the perplexing status of Indian laws pertaining to Telemedicine, which control both the medical profession and information technology. In response to the epidemic, the Board of Governors, revised the

Medical Council Act, 1956 (102 of 1956) and released the Telemedicine Practice Guidelines<sup>5</sup>.

As per Telemedicine Practice Guidelines<sup>5</sup> there are three primary modes of Telemedicine:

- Video
- Audio
- Text (chat, messaging, email, fax etc)

The Government of India's leading Telemedicine system, eSanjeevani, is being implemented nationally for the Ministry of Health & Family Welfare at 1,55,000 Health and Wellness Centers<sup>6</sup>. The National Health Authority (NHA) announces the successful integration of eSanjeevani with its flagship scheme – Ayushman Bharat Digital Mission (ABDM)<sup>7</sup>. Until December 6, 2022 e-Sanjeevani had registered over 8 crore Teleconsultations<sup>8</sup>.

Based on eSanjeevani platform, Government of West Bengal has launched "Swasthya Ingit" to provide affordable, accessible, sustainable and high quality healthcare service delivery up to grass root level. The idea is to provide inclusive & accessible healthcare in rural bengal, so that it reduces out-of-pocket expenditure of villagers; facilitate early diagnosis of the disease, timely intervention and easy follow ups.

Health and Wellness Centers (HWC) act as spokes where patients visit and consult with the Community Health Officer (CHO). The CHO initiates a telemedicine consultation with a Medical Officer at the HUB via computer using the Swasthya Ingit portal. Doctors at the HUB provide consultations, e-prescribe drugs from the approved list and maintain electronic health records. Following this, the CHOs at the spokes dispense the prescribed drugs based on the received prescription through Swasthya Ingit and also print the prescription.

The relationship of trust between patients and doctors has evolved over thousands of years of face-to-face communication. Some patients may feel that their doctor does not genuinely understand their illness or care about their well-being without the personal interaction and visual clues that are crucial in medical care. Furthermore, the application of technology in Telemedicine may present fresh difficulties, such as security risks and technological difficulties, which may further erode trust. Even while telemedicine has advantages, it's necessary to think about how it can affect the doctor-patient relationship. However, it cannot be denied that remote areas like rural, tribal areas can greatly benefit from Telemedicine. Therefore, it is critical to understand people's perceptions of this new method of health care, which will have an impact on everyone's lives.

With this backdrop, a study will be undertaken by the researcher to explore perception and constraints of Telemedicine services among the health care providers and beneficiaries in Purba Bardhaman District, West Bengal.

#### AIMS AND OBJECTIVES

- To explore the perception and constraints faced by the health care providers to provide Telemedicine services in Purba Bardhaman district, West Bengal.

- To explore the perception and constraints faced by beneficiaries to avail Telemedicine services in the study area.

#### MATERIALS AND METHODS

**Type and Design of Study :** Qualitative study with phenomenological approach.

**Study Setting :** The study was conducted in the different level of health facilities providing Telemedicine services in Purba Bardhaman district, West Bengal. Different levels of Telemedicine services are as follows:

- 214 HWC (HWC currently conducting Telemedicine).

- 108 other health facilities including Primary Health Centers (PHC), Block Primary Health Centers (BPHC), Urban Primary Health Centers (UPHC) and Rural Hospitals (RH).

- Sub Divisional Hospital (SDH) and Burdwan Medical College and Hospital (BMCH)

**Study Duration :** Four months (March, 2023-June, 2023).

#### Study Population :

Beneficiaries were selected from different age groups (adolescents, adults, elderly) among those who were visiting HWC for Telemedicine consultation.

#### Service providers were :

- HWC level(Spoke) – Community Health Officer
- PHC level(Hub)–MOIC/GDMO (Medical Officer)

- BPHC/CHC level(Hub)–BMOH/GDMO

- SDH & Medical College level(Hub)–Specialist doctor.

#### Inclusion Criteria :

##### (1) For beneficiaries :

Study subjects who attended at least two Telemedicine consultations (excluding consultation on the day of interview).

##### (2) For service providers :

Service providers working in Telemedicine clinic for at least the last three months.

### Exclusion Criteria for beneficiaries :

Patients who are referred to nearby hospital.

**Sample Size and Sampling Technique :** The study being qualitative in nature, the size of the sample was determined by data saturation and data exhaustion.

10% HWC (that is 21) was selected by simple random sampling from a sampling frame of total 214 HWC (HWC currently conducting Telemedicine). In each HWC, one Focused Group Discussion (FGD) was conducted among six-eight beneficiaries (selected purposively) with the help of FGD guide. Data saturation achieved after five FGDs.

For service providers perspective, from each HWC, one CHO was interviewed with the help of In-depth Interview (IDI) guide. Data saturation achieved after twelve IDIs.

As the number of HWCs is almost twice of other health facilities (namely PHC, BPHC, UPHC, RH), we took 20% (two times of 10%) of 108 of other health facilities, that is 22 by simple random sampling. From each sampling unit one general physician was interviewed. Data saturation achieved after eight IDIs.

SDH and BMCH were visited and specialists were interviewed purposively. Minimum two specialists were interviewed from each hospital. It was also taken care of so that different specialities are represented. Data saturation achieved after ten IDIs.

**Tools and Techniques :** IDI & FGD guide was prepared in consultation with subject experts. It was translated into bengali from english and back translated by another expert keeping semantic and linguistic equivalence.

**Data Collection :** Data was collected after ethical approval by Ethics committee(Memo-BMC/I.E.C/027, Dated-9th Feb'23). Prior to data collection, district and block level health authorities were informed & co-operation was sought. IDI of purposively selected service providers conducted using IDI guide. Informed consent was taken for participation and recording of the interview. They were assured about confidentiality and anonymity. A careful approach was adopted not to give away too much detail to prevent bias. Clear, simple, open-ended questions were asked and the participants were given adequate time to fully express their views. For FGDs participants were briefed about the study and its purpose and written consent were sought. FGD was conducted using the FGD guide in the presence of a moderator. Sociograms were drawn and notes were taken during the sessions. It was taken care of that the notes contain all relevant information including the nonverbal cues. Sessions

were audio recorded while keeping anonymity for the purpose of creating a verbatim. The points raised throughout the session were reviewed with the participants at the conclusion, if required additions or modifications were made.

**Data Management and Analysis :** At first, the entire audiotape (both of the IDIs and FGDs) were transcribed. The verbal cues were also incorporated in the transcript to facilitate the capturing of the entire essence of the interviews and discussions. Then, the important and salient phrases that match the research question were identified from the transcript after which Inductive analysis of the verbatim were undertaken to generate specific codes, subthemes and themes. These themes are representing the collective understanding of the data as per perceived experiences and constraints. Thematic analysis were done to understand the opinion, behaviour and beliefs of the study participants. The data were entered and analysed by using Atlas-Ti Software. The report was prepared following the reporting guidelines of COREQ<sup>9</sup>.

### RESULTS

The results have been presented by tables of generated themes, subthemes, supportive codes and sample verbatims, as well as a hierarchical cluster analysis of themes and sub-themes by a sunburst chart and a tree map. The hierarchical cluster analysis explains how these factors (themes) relate to each other and shows the relative importance of the different facets of the challenges as per the study subjects' perspectives. Direct quotations from the respondent are in Italics. "Consolidated Criteria for Reporting Qualitative Research" (COREQ) guidelines<sup>9</sup> were followed during reporting the present qualitative work (Table 1 & Fig 1).

From the analysis of service providers IDI, six major themes emerged under which sub-themes are discussed.

- (1) Lack of access to infrastructure and equipment
- (2) Training and support related concern
- (3) Resistance to change and adoption of new technology
- (4) Challenge in maintaining patient privacy and confidentiality
- (5) Resource constraints
- (6) Administrative and managerial issue

From the analysis of beneficiaries FGD, four major themes emerged under which sub-themes are discussed (Table 2 & Fig 2).

- (1) Access and availability of Telemedicine services

Table 1 — Thematic representation of perception and constraints in providing the Telemedicine services from healthcare provider's perspective

Theme	Subtheme	Code	Sample Verbatims
Lack of access to infrastructure and equipment	A: Infrastructure challenges	1. Unreliable electricity 2. Limited availability of high speed internet in rural areas 3. Poor cellular service in rural areas	.... Electricity goes out frequently.....The speed of the internet is very bad.....Sometimes the website does not open, it fails for a day or two. Then there is a problem to handle the patient.....
	B: Equipment challenges	1. Limited availability 2. Used equipment supply 3. Lack of maintenance and technical support	....Inverters are not yet operational in our center..... Gave me old laptop, earlier it was in another center. Very slow, battery is also bad.....
Training and support related concern	A: Training challenges	1. Limited access to telemedicine training program 2. Insufficient training on how to use specific telemedicine platform	.....we are not trained very well, but the CHOs are.....many CHOs don't know BP, RBS have separate places to write, write them together with commas. Can't understand anything.....Many doctors don't know that medicine can be selected, they write everything in place of OTHER.....
	B: Support challenges	1.limited support	.....My LAPTOP was damaged, in the shop I fixed it. Had to stop telemedicine for 2-3 days.....
Resistance to change and adoption of new technology	A: Attitudinal challenges	1. Concern about malpractice 2. Lack of trust on online mode of diagnosis 3. Strong preference for in person consultation 4. Difficulty in establishing trust with patients	The prescription is not (hand)written by me. If someone edits and writes something below my writing, it will be my responsibility.....(CHO) write down some numbers. It is often difficult to determine which is BP and which is weight. How to trust.....Is it like this? Can the treatment be done right without seeing the patient? ..... Is trust created without seeing the patient's face? .....If you don't hear it from the doctor's mouth, people never trust on some written words.....How serious the disease is can be understood a lot by looking at the patient's face.....
Challenge in maintaining patient privacy and confidentiality	A: Privacy related issues	1. Insufficient guidance on how to maintain patient privacy during telemedicine consultation	....If a patient (female) has any problem in the chest or genital area, we cannot show the doctor properly. The patient also does not want to show. If someone takes a picture or video and leaves it on the net(social media), we will be guilty. It is good if there are any proper guidelines.....
Resource constraints	A: Incentive challenges	1. No incentive for doctors	....We are doing extra telemedicine with normal duty, no extra incentive is given for that.....
	B: Inadequate availability of medicine	1. Lack of essential medicine	.....Many drugs are not available.....Suppose two drugs for high blood pressure, amlo and losar, many patients get both. Sometimes we have supply of one medicine, sometimes the other. The patient who gets both, how to give him? Medicine(lack of medicine) is our main problem.....
	C: Inadequate manpower	1. Unavailability of doctors 2. Long waiting period 3. Managing a large volume of patients	....Many times doctor is not available (online)..... (if)after 40-45 minutes line is available, that too gets denied.....many patients get stuck in opd. making trouble. It is better to increase the number of doctors.....
Administrative and managerial issue	A: Lack of coordination with doctors	1. Doctor unaware about medicine availability 2. Call denial by doctors	....Many times it happens, the medicine that the doctor prescribed has run out for me. Then the patient has to buy from outside.....Many doctors deny call, then there is a lot of problem. The data that I wrote, all gets deleted. Do not receive if they are busy. Then at least the data does not have to be written twice.....
	B: Unrealistic target	1. Quality compromised by quantity	....Now target is given from CMOH office. Same amount of patient does not come every day, how can I fulfill the target? Quality is being compromised while meeting targets.....

- (2) Acceptability and trust
- (3) Quality and effectiveness
- (4) Perception

### DISCUSSION

The present study aimed to explore the perceptions and constraints of Telemedicine services among healthcare providers and beneficiaries of West Bengal. The study found that the service providers faced several challenges related to lack of access to technology infrastructure and equipment, limited

training and support, resistance to change and adoption of new technology, challenge in maintaining patient privacy and confidentiality, resource constraints and administrative and managerial issues. On the other hand, beneficiaries reported issues related to access and availability of Telemedicine services, acceptability and trust, quality and effectiveness of Teleconsultation, and perception.

The findings of this study are consistent with previous research conducted in different parts of the world. Powell, *et al*<sup>10</sup> identified lack of reimbursement,

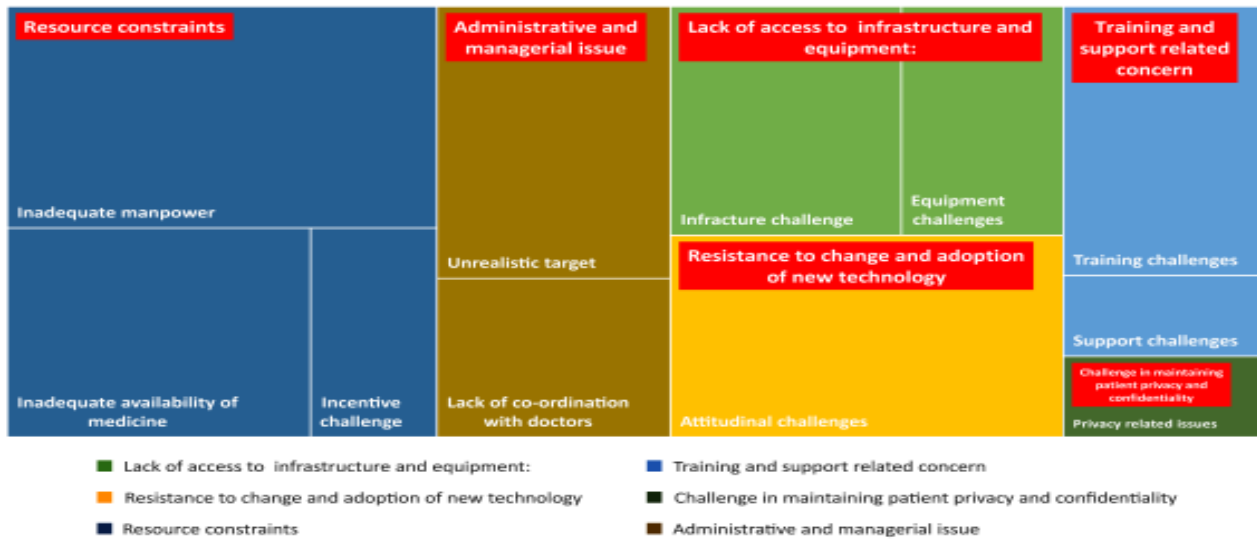


Fig 1 — A treemap diagram that shows a hierarchy chart of different themes and subthemes. It represents the identified themes and their relative importance. The different themes and the subthemes under each theme are nested into rectangles of different size and colour shade and the rectangular areas are proportional to the specified dimension of the coded data

Table 2 — Thematic representation of perception and constraints in availing the Telemedicine services from the beneficiaries' perspective

Theme	Subthemes	Codes	Sample Verbatims
Access and availability of telemedicine services	Internet connectivity	1.Poor signal strength	...sometimes the server is down....
	Staff availability	1. Long waiting period 2. Lack of CHO availability	.....You have to wait for one - one and a half hours to see the doctor. We have work too. (If)Doctor Babu is not available for a long duration, then CHO didi wrote down our problem, then sent medicine through ASHA's hand.....Sometimes the center is closed. Closed unless CHO is there.....
	Unavailability of medicine	1. Lack of variation of medicine 2. Shortage of medicine	.....Not all medications are available. We can't always buy from outside, then the medicine is discontinued.....I am fine with sugar medicine, many times it is not available. Then didi change the medicine. But that's always good to have.....
Acceptability and trust	A. Trust and confidence	1. Skepticism 2. Concern about privacy	....I don't know if it works or not. Not fully believed.....It is not possible to tell everything to the doctor on TV. Many people are standing here too.....
	B. Lack of physical examination	1.Difficulty in diagnosis 2.Concern about treatment efficacy	.....Can't see with hands (by doctor's own hand) . Everything is on Didi's word.....
Quality and effectiveness	A. Quality and effectiveness of teleconsultation	1. Limitation of examination by CHO 2. Potential of misdiagnosis 3. Need for in person consultation in complex cases	....It is a different matter if it is an old disease. If something new, who knows whether the doctor understands correctly!.....It seems that sometimes a doctor needs to come to see serious patients.....
	B. Concern about follow-up	1. Follow-up to same doctor	.....It would have been better if the checkup could have been done by the same doctor after being seen.....
Perception	A. Benefit of telemedicine	1. Increased access to healthcare services 2. Time and cost saving 3. Patient satisfaction 4. Anxiety relief	.....Before going to a big hospital, there was a lot of worry. I could not go alone. People used to complain in the hospital. No problem here. I can come alone.....Telemedicine has brought many benefits to people. Earlier, going to the hospital used to take a day, and travel costs were high....



Fig 2 — A Sunburst chart that depicts relative contribution of various themes and subthemes that emerged from analysis of FGD. The inner circle of the chart consists of themes and the surrounded outer circle contains the deeper hierarchy level, ie, subthemes. The angle of each segment is proportional to the representative data weightage. Each theme and the subthemes under it are different colour coded

regulatory barriers and technical issues as the major challenges faced by health care providers in implementing Telemedicine services in the United States. Another study<sup>11</sup> in United States showed that some disadvantages of telehealth include limitations with performing comprehensive physical examinations, possibilities for technical difficulties, security breaches and regulatory barriers.

In terms of beneficiaries' perspectives, previous researches has also identified similar themes. A systematic literature review conducted by Assefa, *et al*<sup>12</sup> in Ethiopia reported that lack of awareness, accessibility and affordability were some of the major barriers to the adoption of Telemedicine services among beneficiaries. Additionally, a study conducted by Bakshi, *et al*<sup>13</sup> in India reported that the quality of Teleconsultation, trust in the provider and convenience were important factors affecting the adoption of Telemedicine services among beneficiaries.

#### Limitations :

Data is collected from a rural district of Bengal thus lacking generalisability and so the findings are more applicable to different rural districts of Bengal.

#### CONCLUSIONS

In conclusion, this study provides valuable insights

into the perceptions and constraints of telemedicine services among healthcare providers and beneficiaries in India. The findings highlight the need for more investment in technology infrastructure, training and support for healthcare providers and resource allocation to overcome the barriers to the provision of Telemedicine services. Furthermore, the study findings emphasize the need to address the concerns of beneficiaries, such as trustability, quality, and effectiveness of Teleconsultation services and improve the perception of Telemedicine services to increase its adoption among beneficiaries.

#### REFERENCES

- Em S, N S — One hundred years of telemedicine: does this new technology have a place in paediatrics? *Arch Dis Child [Internet]* 2006 Dec [cited 2022 Dec 9]; 91(12). Available from: <https://pubmed.ncbi.nlm.nih.gov/17119071/>
- Rivera-Ruiz M, Cajavilca C, Varon J — Einthoven's String Galvanometer. *Tex Heart Inst J* 2008; 35(2): 174-8.
- Wootton — 2012 - Long-running telemedicine networks delivering huma.pdf [Internet]. [cited 2022 Dec 4]. Available from: [https://www.drgalen.org/international\\_guidelines\\_world\\_health\\_organisation.pdf](https://www.drgalen.org/international_guidelines_world_health_organisation.pdf)
- Chellaiyan VG, Nirupama AY, Taneja N — Telemedicine in India: Where do we stand? *J Family Med Prim Care* 2019; 8(6): 1872-6. doi: 10.4103/jfmpc.jfmpc\_264\_19.
- Telemedicine Practice Guidelines.pdf [Internet]. [cited 2022 Dec 14]. Available from: <https://www.mohfw.gov.in/pdf/Telemedicine.pdf>
- eSanjeevaniOPD - SAFE HOME OPD - National Teleconsultation Service-MoHFW [Internet]. [cited 2022 Dec 14]. Available from: <https://esanjeevaniopd.in/About>
- 'eSanjeevani', Govt. of India's free Telemedicine service integrated with NHA's Ayushman Bharat Digital Mission (ABDM) [Internet]. [cited 2022 Dec 14]. Available from: <https://pib.gov.in/pib.gov.in/Pressreleaseshare.aspx?PRID=1830743>
- National telemedicine service of India - eSanjeevani achieves 8 crore teleconsultations [Internet]. [cited 2022 Dec 14]. Available from: <https://pib.gov.in/pib.gov.in/Pressreleaseshare.aspx?PRID=1881185>
- Tong A, Sainsbury P, Craig J — Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care J Int Soc Qual Health Care* 2007; 19(6): 349-57.
- Powell RE, Henstenburg JM, Cooper G, Hollander JE, Rising KL — Patient Perceptions of Telehealth Primary Care Video Visits. *Ann Fam Med* 2017; 15(3): 225-9.
- Gajarawala SN, Pelkowski JN — Telehealth Benefits and Barriers. *J Nurse Pract* 2021; 17(2): 218-21. doi: 10.1016/j.nurpra.2020.09.013. Epub 2020 Oct 21. PMID: 33106751; PMCID: PMC7577680.
- Assefa Y, Gelaw YA, Hill PS — Community health extension program of Ethiopia, 2003–2018: successes and challenges toward universal coverage for primary healthcare services. *Global Health* 15, 24 (2019). <https://doi.org/10.1186/s12992-019-0470-1>
- Bakshi S, Tandon U — Understanding barriers of telemedicine adoption: A study in North India. *Systems Research and Behavioral Science* 2022; 39(1): 128-42. <https://doi.org/10.1002/sres.2774>.