

**"Rural India is the real India". Telemedicine and Rural Healthcare**



India is a vast and diverse country, and the characteristics and challenges of rural areas can vary significantly from region to region. Nearly 65-70% of India's population is found in rural areas. India's rural population for 2021 was 909,384,771, a 0.08% increase from 2020.

Some of the key challenges faced by rural India include healthcare, access to basic services, education, agriculture dependence, social issues, and lack of financial inclusion.

A significant challenge faced by the rural population is the lack of a proper medical facility. The nearest hospital is several hours away, and for the elderly, pregnant female or critically ill, the journey is arduous, to say the least.

Furthermore, the villages lack reliable transportation, making it difficult for those in dire need to access immediate medical attention. In emergencies, people have no choice but to rely on each other's help, which, while heartwarming, is hardly a substitute for professional care. Moreover, the scarcity of qualified healthcare professionals in rural areas perpetuates the problem.

Due to poor access to healthcare facilities, lack of health insurance, limited knowledge and awareness regarding health, and poor referral system, rural residents are at higher risk for poor health outcomes.

As mentioned, approx. 70% population live in rural areas however when one considers the doctor-patient ratio 70% of doctors live in urban areas. This has created a huge gap between rural and urban health.

Most health indicators, especially mortality and morbidity, show a poor state of health in the rural sector.

With the objective that health care should reach the person living in the remotest region, the concept of Primary health care was introduced.

In the last few decades, rural development in India has shown drastic improvement due to political commitment. There has been access to safe drinking water, roads, electricity, and quality health care at the doorstep for rural residents.

A similar development has been observed in the information and technology sectors.

With the modernisation of technology, rapid availability, and affordability of internet connection even in most rural areas, both audio and video calls have become a reality.

Telemedicine, also known as telehealth, is a form of healthcare that involves the use of telecommunication technologies via real-time two-way communication to provide medical services and exchange health information remotely using electronic audio and visual means. It enables patients and healthcare professionals to interact and consult without being physically present in the same location.

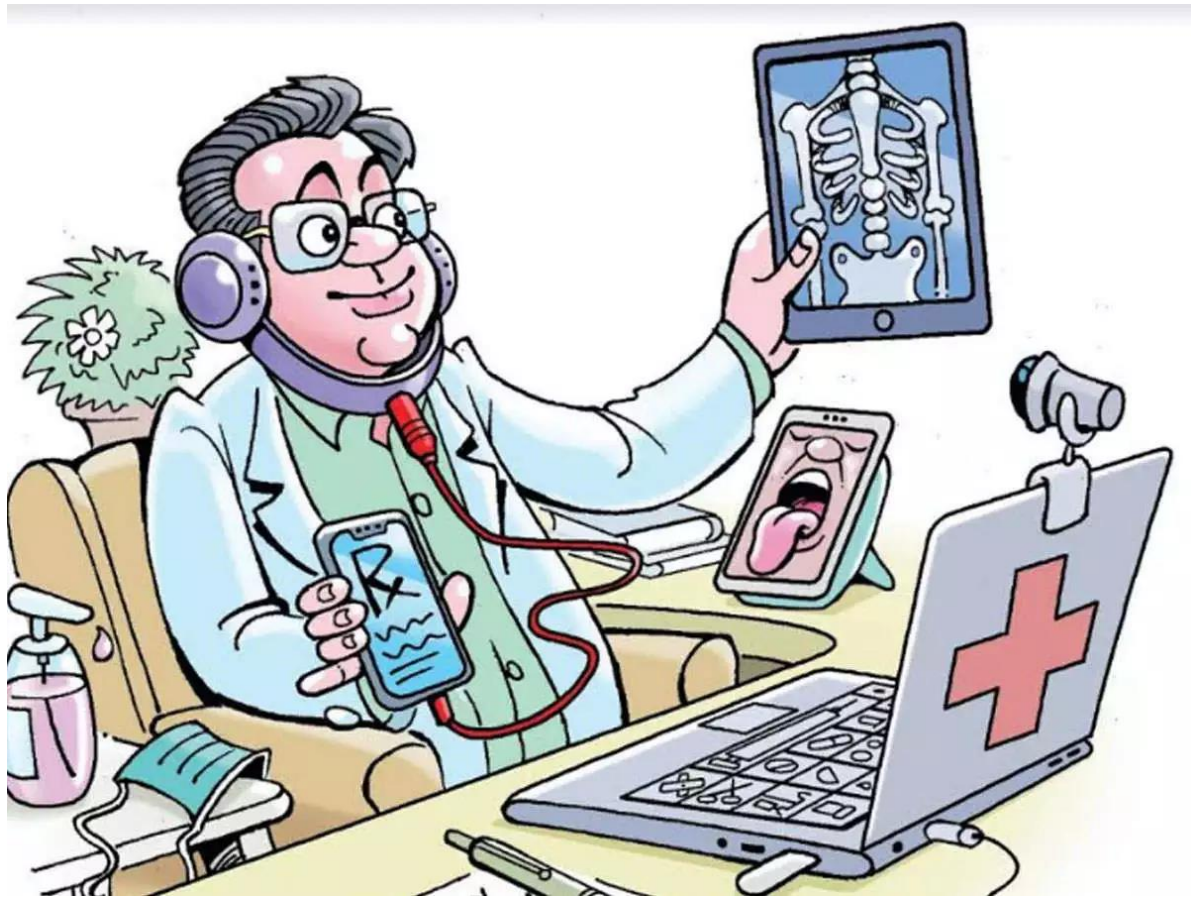
Telemedicine also helps in follow-up calls for patients suffering from chronic illnesses like diabetes, or hypertension. Follow-up calls can be for counselling regarding lifestyle modifications, any minor drug adjustments, lab investigations reporting etc, in all cases where consultation can be done easily via telemedicine avoiding doctor visits.

The primary advantages of telemedicine are time-saving and cost-effectiveness. Both offer convenience to patients as well as doctors.

In primary healthcare, telemedicine means giving consultations in the form of phone calls, where the patient seeks the doctor's advice about a medical problem. Telemedicine does not replace face-to-face consultation when needed but complements it.

Telemedicine provides easy access to timely health care services to patients and can reduce the gap between rural and urban health care. A patient who has difficulty travelling long distances to cities can make the best use of telemedicine in the comfort of their place.

## Tools Required for Telemedicine



A telemedicine system in rural areas requires minimum infrastructure and resources. It would need internet connectivity, a personal computer with customized medical software connected to a few medical devices and peripherals, such as an ECG or X-ray machine or an X-ray scanner for scanning X-ray photos. Through this computer, digitized versions of patients' medical images and diagnostic details (such as X-ray images and blood test reports) are dispatched to specialist doctors through the satellite-based communication link.

The information is received by a specialist who will examine the reports, diagnose, interact with the patients (along with local doctors), and suggest appropriate treatment through video conferencing.

The entire process is user-friendly, requires basic training by healthcare workers and the software and equipment can be easily managed by medical technicians posted at the hospital.

The district hospitals, sub-district hospitals and primary health centres can be linked with telemedicine networks.

Telemedicine offers many advantages for the rural population:

- Improved access to healthcare: Telemedicine allows patients in remote locations to access medical consultations, diagnoses, and treatment options without having to travel long distances to urban centres.
- Reduced wait times: Telemedicine can reduce wait times, ensuring that patients receive timely medical attention.
- Time and cost savings: By avoiding the need for physical travel to healthcare facilities, telemedicine saves patients time and money on transportation.
- Enhanced healthcare outcomes: Telemedicine enables early diagnosis and timely intervention for various medical conditions. When healthcare services are readily available, patients are more likely to seek help at the early stages of illnesses, leading to better outcomes and reduced morbidity.
- Specialist consultations: Rural areas often lack specialized medical services. Telemedicine allows patients and local healthcare providers to connect with specialists from urban centres, enabling remote diagnosis and expert guidance for complex medical cases.
- Chronic disease management: Telemedicine can be particularly advantageous for managing chronic conditions, such as diabetes or hypertension. Patients can have

regular virtual check-ins with healthcare professionals, promoting continuous monitoring and timely adjustments to treatment plans.

- Health education and awareness: Telemedicine platforms can be used to provide health education and promote awareness of prevalent health issues in rural communities. This empowers patients to make informed decisions about their health and adopt preventive measures.
- Home healthcare support: Telemedicine enables remote monitoring of patients at home, especially beneficial for elderly individuals or those with limited mobility. Healthcare professionals can assess patients' conditions and provide care plans without the need for in-person visits.

While telemedicine offers numerous advantages and has proven to be a valuable tool in modern healthcare, there are also some notable limitations to consider:

- Limited physical examination: Telemedicine can never fully replace in-person physical examinations. Many conditions require hands-on assessments and diagnostic tests that are difficult or impossible to perform remotely.
- Lack of personal connection: In-person interactions between patients and healthcare providers can create a stronger personal connection and trust.
- Unstable internet connections, and technical glitches, such as dropped calls, frozen screens, or poor audio quality, can disrupt telemedicine consultations.
- Misdiagnosis or delayed diagnosis: Certain medical conditions may be challenging to diagnose accurately through telemedicine, leading to misdiagnosis or delayed diagnosis, which can have serious consequences for patients.
- Limited treatment options: Some medical treatments and procedures require in-person visits or hospital settings

In conclusion, Telemedicine has both merits as well demerits. However, when one weighs the benefits with limitations, in the current scenario of India, where multiple challenges like limited resources, infrastructure and the recent covid pandemic have added further burden to the health care system telemedicine offers great hope and solution to provide access to affordable and acceptable health care services to all thereby bridging the gap between rural and urban health.



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