

Tele-health: Revolutionizing Health care for Rural India

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Telemedicine is an evolving health care delivery service in the developing world. The terms 'Tele-Health' and 'Telemedicine' are used interchangeably in health care worldwide. According to World Health Organization, Telemedicine is defined as 'The delivery of healthcare 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 evaluation and for the continuing education of healthcare providers, all in the interests of advancing the health of individuals and their communities'. Tele-health care and tele-education are two different applications of telemedicine.¹

India has a three tier public health care infrastructure with Primary Health Centers, Community Health Centers across rural and semi urban area and tertiary care provided by medical colleges and multi speciality hospitals present exclusively in urban India. The progresses in health care indicators are quite uneven across India with significant urban-rural differences. About 74% of qualified doctors' practice in urban and semi-urban areas serving only 28% of Indian population, leaving behind the majority of vulnerable, rural and remote Indian population at dismay.² Eventually for tertiary care, these people from remote areas have to travel a long distance to get speciality care services. Telemedicine provides a method of bridging this gap by setting up of telecommunication infrastructure and

telemedicine center especially in underserved

population of rural India, hilly regions, difficult to reach terrains, tribal areas and island like Andaman & Nicobar, Lakshadweep.³

Telemedicine in India is in nascent stage. Patient health care services provided through telemedicine are tele-consultation, tele-diagnosis and tele-treatment, thereby providing cost effective, accessible, quality health care services to remote rural population. In all these services, patient will get specialist consultation with the help of local doctor for further line of management in difficult cases. Simultaneously it enables primary care physicians to provide speciality care under the guidance of specialist for rural population.

Major Telemedicine initiative was started in 2001 with Indian Space Research Organization (ISRO) in coordination with Ministry of Health and Family Welfare (MoHFW), Ministry of Communications and Information Technology, Department of Science and Technology, and Ministry of Defence.³ With public private partnership and progressive growth in Information Technology, Telemedicine has become a reality for underserved population. ISRO has established Telemedicine network which has covered 100's of hospitals and remote villages. Premier institutes like All India Institute of Medical Sciences, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Post Graduate Institute of Medical Education and Research have been connected to peripheral hospitals for superspeciality consultation. Private health care providers like Apollo group of hospitals, Christian Medical College, Sri Ramachandra Medical College, Amrita Institute of Medical sciences, Fortis Hospital, Tata Memorial Hospital, Asia Heart Foundation, Rabindranath Tagore International Institute of Cardiac Sciences Hrudayalaya Bangalore, Sankara Nethralaya, Arvind Eye Hospital are also playing major role in taking the tertiary care to rural India.⁴

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Ministry of Health and Family Welfare has constituted National task force on Telemedicine in 2005 and National Rural Telemedicine Network under National Health Mission. Department of Information Technology has prepared "Recommended Guidelines & Standards for Practice of Telemedicine in India" to materialize uniform standards to carryout tele-health services. Sanjay Gandhi Post Graduate Institute has set up a 'School of Telemedicine and Biomedical Informatics' to train man power in the field of telemedicine and e health which act as a national resource center for telemedicine.³

MoHFW has implemented Integrated Disease Surveillance Project for connecting all district hospitals to medical college hospitals; OncoNET under National Cancer Control Program has been established to connect regional cancer centers with peripheral hospitals to provide comprehensive cancer care to needy people; Tele-Ophthalmology unit under National Blindness Control Program has been launched to reach remote people for quality eye care.³

Services provided are synchronous real time telemedicine and asynchronous store and forward telemedicine services through either fixed or mobile telemedicine units. Telemedicine specialties doing remarkable work in India are tele-ophthalmology, tele-radiology, tele-pathology, tele-dermatology, tele-cardiology and tele-mentoring in surgery.^{3,5}

Non-profit organization like Sankara Nethralaya, a leading eye care institute based in Chennai is doing promising work in telemedicine. After adequate planning with prior announcement of camp dates, a 'trained social worker and optometrists' team will visit the designated villages and the work flow consisted of registration of patients in electronic medical records, followed by other eye examinations like vision check, refraction, slit lamp examination, fundus examination and intra-ocular pressure testing.

The images of slit lamp, fundus eye examination, visual acuity data and the patient details will be sent to central hub of Sankara Nethralaya hospital where through video conferencing, ophthalmologist will hold tele-consultation with the patient in the presence of optometrist. After expert consultation, final diagnosis will be made and the patient will be treated accordingly. Between 2003 and August 2014, Sankara Nethralaya has conducted 4763 tele-ophthalmology camps and 418732 people from remote rural areas benefitted from it. Other

services provided through tele-ophthalmology are awareness meetings, eye screening camp for school children and training of school teachers in eye care.

Similarly, Narayana Hrudayalaya Heart Hospital has revolutionized tele-cardiology in India; by using Trans Telephonic ECG Machine, cardiologist in the telemedicine centers are providing expert consultation in camps as well as during emergencies and treated over 12000 patients over a period of two years. Furthermore, they are also providing education and counseling for general public, training of medical professionals and disaster management and relief through telemedicine.

India is undergoing a major transition in health care. Tele-health care is the cost effective method to bridge the urban rural divide on health care. Only few percentage of rural population is covered by tele-health services; and with enormous growth in IT sector in India, all the stakeholders have to scale up efforts to universalize tele-health to cover entire India.

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