

Role of e-Health Initiatives in Rural Health Care Delivery in India

Abstract

According to Census 2011, total population of India is 121 crore, out of which 83.3 crore (68.84%) population lives in rural areas, and half of them live below the Poverty Line, struggling for better and easy access to health care services.

A number of Health-IT initiatives are taken in the areas of healthcare with the objective for providing better quality consultation and caring for citizens in areas where specialized patient care is not available. Organization like ISRO, reputed academic medical institutions like- SGPGI, AIIMS, PGIMER, AIMS, SRMC and corporate hospitals like- Asian Heart Foundation, Apollo Hospitals, SGRH, Fortis, Max etc. have taken and continuing to take significant initiatives for installation of telemedicine systems at different parts of country.

Keywords: Health-IT initiatives, e-Health, Telemedicine, Online Consultation.

Introduction

India is the world's largest democratic country, and second most populous country in the world. Despite recent successes in the economic front, India still faces many social challenges like poverty, illiteracy, sanitation, gender inequality and lack of healthcare for all. The healthcare disparity is mainly due to shortage of trained health care professionals and lack of necessary infrastructure in remote areas of the country. E-Health and Telemedicine as a tool for healthcare delivery, particularly in the rural areas where 68.84% of the population lives, has been addressed by the Government of India since the turn of century using e-Health and Telemedicine.

The World Health Organisation (WHO) defines Telemedicine 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 diseases 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."

E-health is a relatively recent term for health care practice which is supported by electronic processes and communication. According to Gunther Eysenbach, "E-health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies." Most notable attribute of e-health is that it is enabling the professionals, to a system focused on keeping citizen healthy by providing them with information to take care of their health whenever the need arises, and wherever they may be.

Objective of the Study

1. To study the present status of e-health initiatives.
2. To study the role of e-health initiatives in rural healthcare delivery in India.

Review of Literature

Kharade and Sharma discussed that the e-health opportunities and challenges in India. Murray et al. (2011) study in the topic of "why is it difficult to implement e-health initiatives?" and found that there were wide differences in experiences of implementation and embedding across these case studies these deference were well explained by collective action components of NPT.

Chris kimble (2015) found in his study that the careful and creative application of information technology can play a significant role in e-health challenge. Valuable lessons can be learned from an analysis of ten innovative telemedicine and e-health initiatives. Having proven their effectiveness in addressing a variety of medical needs, they have



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progressed beyond small-scale implementations to become an established part of healthcare delivery system around the world.

K.Prabhakar Rao (2016) discussed about opportunities in implementation of e-health. Over the last couple of decades developments in the information and communication technology have made the most palpable impact on health care management all over the world.

P. Mathur et al. (2017) found in their study that telemedicine as a healthcare delivery system has been effectively used in several underserved areas of India, through the initiatives taken by the federal state governments as well as private. Farhad Ahamed et al (2017) discussed about the global successful m-health interventions and the scope of m-health in India context along with challenges to address.

Method

Literature search was done on Google search engine using keywords telemedicine, e-health and health IT initiatives in India.

Role of e-Health Initiatives

Ministry of Health & Family Welfare (MoHFW) has undertaken various e-Health initiatives for improving the efficiency & effectiveness of healthcare system. The Ministry is progressively planning several new initiatives to be implemented in the coming years. The various initiatives covered under different areas including citizen centric services, information management systems, standardization (adoption & promotion), regulation etc.

MoHFW undertook various activities towards its aim of implementing e-Health in an integrated manner across central and state levels. These activities are-

National Health Portal (NHP)

NHP launched in 14th November, 2014, with a objective to create awareness among the citizens about health, Government programme & services in health sector. A number of new & value-added features are incorporated in NHP. These features are-

- i. A voice portal; providing information related to various issues of health, diseases, lifestyle, first aid, directory services, health programme etc. through a toll free number 1800-180-1104 in six languages viz. Hindi, English, Tamil, Gujarati, Bengali and Punjabi.
- ii. Mobile Apps; for providing services of National AIDS Control Organisation (NAACO) supported Blood Banks, Hospital Locator etc.

Online Registration System (ORS)

ORS launched in July, 2015, providing services to citizens for taking online registration & appointment, payment of fees, online viewing diagnostic reports, enquiring availability of blood online etc. in various public hospitals (about 1000 hospitals) and so for around 9 lakh appointments have been translated online.

'Mera Asptaal' (Patient Feedback) Application

To empower citizens to participate in improvement of healthcare service delivery by providing feedback on service quality, facilities etc. at hospitals using a multi-channel approach viz. SMS, Outbound Dialing (OBD), Web Portal and Mobile

Apps. It is expected to help the government to take appropriate decisions for enhancing the quality of healthcare delivery across public facilities which will improve the patient's experience. Under Phase I, around 141 hospitals have been covered.

Mobile Academy

It is a free audio training course launched in 2016, and designed to expand and refresh the knowledge base and communication skills of ASHAs. More than 70,000 ASHAs has completed the Mobile Academy Course since inception in Bihar, Chhattisgarh, Himachal Pradesh, Jharkhand, Madhya Pradesh, Rajasthan and Uttarakhand.

Integrated Disease Surveillance Programme (IDSP)

Online portal for data entry, reports, data analysis, training module. There is also a 24x7 call centre for disease alerts on a toll free number, for verification and initiating appropriate action.

eRakt Kosh

eRakt Kosh is a comprehensive, efficient and total quality management approach with the help of online systems and is being rolled out for all the licensed blood banks in public and private health facilities in States/UTs. eRakt Kosh is online in 7 Blood Bank in States/UTs of Delhi, Madhya Pradesh, Uttarakhand and Uttar Pradesh. Around 124 Blood Banks are registered on e-RaktKosh Portal for Blood Stock Updation. 2 blood bank in Uttarakhand, 1 in Uttar Pradesh and 1 in West Bengal are in process of using application.

Drugs and Vaccines Distribution Management System ('eAushidhi')

It deals with purchase, inventory management and distribution of various drugs, sutures and surgical items to various District Drug Warehouses of States/UTs, District Hospital (DH), their sub stores at CHC, PHC etc. by automating the workflow of procurement, supply-chain, quality control and finance department in States/UTs level. It has been implemented so far in 9 States/UTs- Andhra Pradesh, Gujarat, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan & telangana and is in process in 8 States/UTs- Uttar Pradesh, Uttarakhand, Bihar, Himachal Pradesh, Manipur, Jharkhand, Meghalaya & Chhattisgarh.

mDiabetes Program

It is a mobile-based initiative for prevention and care of diabetes by giving a missed call to 011-22901701. Currently more than 1 lakh users are registers for mDiabetes.

Tobacco Cessation Programme

It is a mobile-based interventional initiative for counseling and helping people to quit tobacco, by giving a missed call to 011-22901701. Currently over 20 lakhs total missed call have been captured and around 15 lakhs users are registered for this programme.

TB Patient Monitoring System "Nikshay"

For tracking of individuals for treatment-adherence has been implemented across all states for monitoring of TB patients. Also a Missed Call Centre facility with Toll Free No. 1800-11-6666 for reaching to unreached TB patients is available for counseling

and treatment support. Approximately 80 lakhs patients has been registered on Nikshay.

Kilkari

It delivers free, weekly, time appropriate 72 audio messages about pregnancy, child birth and child care delivery to families mobile phones. Approximately, 6 crore successful calls have been made so far under Kilkari in Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, Uttar Pradesh and Uttarakhand.

Mother and Child Tracking System (MCTS)/ Reproductive Child Health (RCH) application

It is a individual-based tracking system implemented across all the States/UTs to facilitate timely delivery of antenatal and postnatal care services and immunization to children with an objective of improving IMR, MMR & morbidity; providing alerts to health service providers about the services due list and service delivery gaps; appropriate health promotion messages to beneficiaries. Currently over 12 Crore pregnant women and around 11 Crore children have been registered on MCTS/RCH portal since inception.

Electronic Vaccine Intelligence Network (eVIN)

eVIN is an indigenously developed technology system that provides real-time information on vaccine stock and flow, and storage temperature across all cold chain points through a smart phone application. The innovative eVIN is presently being implemented across 12 States/UTs in India. The eVIN aims to strengthen the evidence base for improved policy-making in vaccine delivery, procurement in vaccine delivery, procurement and planning for new antigens in India.

Mobile Apps

To harness the wide penetration of Mobile connectivity, various mobile apps have been launched viz.

1. Vaccine Tracker (Indradhanush Immunization): Support patients in tracking immunization status of their children and helps them in ensuring complete and timely vaccination.
2. India Fights Dengue: Enables a user to check Dengue Symptoms, get nearest Hospital/Blood Bank information.
3. NHP Swasth Bharat: Information dissemination on Diseases, Lifestyle, First Aid.
4. NHP Directory Services: Provides information related to Hospital and Blood Banks across India.
5. No More Tension Mobile Apps: Information on stress management related aspects.
6. Pradhan Mantri Surakshit Matritva Abhiyan Mobile App: For reporting pregnancy care related information from across States

Online Consultation – Telemedicine

For universal outreach of healthcare services in an affordable manner, MoHFW has aligned its initiatives along with the Sustainable Development Goal to ensure healthy life and well-being of the citizens. MoHFW has proactively taken a leap to utilize the effective fusion of Information and Communication Technologies (ICT) with existing health infrastructure in meeting the challenges of

healthcare delivery to rural and remote areas to ensure continuum of care. By encompassing ICT innovations, Tele-health solutions are being promoted to deliver basic and specialized health care services nearest to the end user in inaccessible and rural areas. The key initiatives of the MoHFW in this direction includes-

National Medical College Network (NMCN)

Under Phase-1 of NMCN scheme, 50 Government Medical Colleges are being inter-linked with the purpose of Tele-education, e-Learning and online Medical Consultation by utilizing the connectivity provided by National Knowledge Network (NKN).

Under this initiative, a virtual layer of Specialty/Super Specialty doctors from these Medical Colleges would be created for providing "Online Medical Consultation" facility to citizens which will be similar to OPD facility but in a virtual way through a Web-Portal. This will help patient from rural, remote and urban areas to access doctors and specialists easily even from their home location through their Smart Phones, through Government healthcare Institutions (PHC/CHC). Also eClass room are being set up at these Medical Colleges for sharing and streaming the important Lectures/Seminars.

National Telemedicine Network (NTN)

NTN providing Telemedicine Services to the remote area by upgrading existing Government Healthcare facilities (MC, DH, SDH, PHC and CHC) in States. In the First Phase of NTN, it is proposed to connected 500 PHC/CHS/SDH at remote/rural locations with 100 District Hospitals and 50 Medical Colleges. So far in the financial year 2017-18, 7 States/UTs have been provided financial assistance for providing Telemedicine services by established NTN.

Establishment of SATCOM based Telemedicine Nodes

Department of Space (DoS) through Indian Space Research Organisation (ISRO), has initiated a nationwide Telemedicine (TM) programme in 2001 and provided TM systems hardware, software, communication equipment as well as satellite bandwidth for 384 Hospitals with 60 Specialty Hospitals connected to 306 remote/rural/district/medical college hospitals. Eighteen (18) Mobile Telemedicine units were also enabled for Satellite connectivity. The existing TM nodes are underutilized and at present only around 100 Telemedicine nodes are operational.

The Prime Minister vision of using space technology to drive health services, and considering the shortage of doctors in remote, inaccessible and rural areas of country, MoHFW & Department of Space (DoS) jointly have been taking steps to setup Satellite communication based Telemedicine nodes at various unreachable geographical locations including Chardhams and other important pilgrimage centers (Amarnath, Ayappa and Kedarnath) where the quantum of pilgrims are massive for health awareness, screening of non-communicable disease (NCD) and for providing specialty consultation to the devotees visiting these places. All these telemedicine

nodes are now part of the ISRO National Telemedicine Network and could also be serviced by any of the specialist nodes across the country like PGI Chandigarh, SGPGI Lucknow, JIPMER Pondicherry and AIMS New Delhi etc.

A Telemedicine Mobile Van has been deployed at Ujjain Kumbh Mela from 22nd April, 2016 to 21st May, 2016 from SGPGI Lucknow.

Results and Discussion

We found that Health- IT initiatives as a healthcare delivery system has been efficiently used in several States/UTs of India through the initiatives taken by MoHFW, ISRO as well as Private Sector.

The main challenges faced by e-health regarding its widespread acceptance as a method of healthcare deliver. There are other issues like standardization of the methods and techniques used for health care delivery, payment by insurers and cost benefit analysis that need to be resolved. At present the challenge is to integrate telemedicine nodal centers all across the country and utilize the services of these centers in the field of public health, especially in the area of maternal and child health.

Conclusion

Although not a substitute for traditional healthcare system, e-Health can be used to overcome healthcare disparities in the remote, inaccessible and rural areas of the country. This approach for

healthcare delivery can be replicated around the world, especially in the developing countries.

References

1. *Annual report 2015-16 Department of Health & Family Welfare, Ministry of Health & Family Welfare Government of India Chapter 20 E-governance & Telemedicine page -297.*
2. *Ahamed F et al., Int J Community med Public Health. 2017 Apr, 4(4): 875-881.*
3. *C. Kimmble. Business models for e-health; evidence from ten case studies. Global Business and organizational excellence, 34 (4), 2015, pp.18-30.*
4. *Kurukshetra, A journal of rural development, Publication Division Ministry of Information & Broadcasting, Govt. of India, vol. 65 August 2017, Page 53.*
5. *Mathur et al., Prim Health care 2017. 7(1): 260*
6. *National Rural Telemedicine Network, Draft Proposal Version 1.0, Ministry of Health & Family Welfare Government of India, page-4.*
7. <http://mohfw.gov.in/about-us/departments/departments-health-and-family-welfare/e-health-telemedicine/e-governance>
8. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2782224>
9. <http://www.implementationscience.com/content/6/1/6>
10. www.ijirae.com