Telemedicine as a Tool of E-Healthcare System

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ABSTRACT - Information and Communication Technologies (ICTs) enable online communication about medical issues and diagnosis of complicated diseases by linking medical practitioners who are separated geographically. ICTs have the power to change the quality of healthcare services and patient care as well as the management of healthcare systems. The use of electronic information to communicate technologies to provide and support healthcare recipients who are separated through distance is termed as Telemedicine. People living in remote and rural areas across the globe are denied timely and quality medical care. In India, The National Aeronautics and Space Administration (NASA) played an important part in the early development of telemedicine. This paper focuses on issues relating to the status of Telemedicine in India with special emphasis on the challenges posed to the implementation of this concept. The innovative services adopted by hospitals and Government to promote the implementation of Telemedicine is also focused in this paper.

Key words: Telemedicine, healthcare, Government, NASA, ICTs, medical care.

I. INTRODUCTION

Over the last few decades, the Indian health care delivery system has gradually moved from public health care to a more private system which offers multiple models for quality health care. To deliver ehealth, the Indian government has worked with private entities to deliver various applications and services. Currently India has several health care policies such as the Central Government Health Scheme and the Employees' State Insurance Scheme but these provide limited social security health plans for its citizens. India spends more on healthcare as a percentage of GDP than some of its neighbours. This is comparatively lower than that of the developed countries like the U.S.A., Germany and the U.K. India's healthcare industry is plagued by an acute shortage of trained medical personnel to provide health care facilities in addition to lack of physical infrastructure an government spending.

There is a vast disparity in the quality and availability of healthcare services in urban and rural areas in India. Fundamental facilities like power, transportation facilities, etc are not available in some villages. Urban India has five to seven times the hospitals, dispensaries, hospital beds, and physicians per 1, 00,000 people than in rural India. This situation can be overcome through the provision of ehealth, which uses Information and Communication Technology (ICT) such as computers, mobile phones and satellite communications for the delivery of health services and information.

Ehealth can embrace modern technology to broaden health accessibility in rural India and it can be part of the solution for India's health care woes. Ehealth (also written e-health) is a rather a modern term for healthcare practice bolstered by electronic processes and communication, dating back to at least 1999. Usage of the term varies: some would contend it is identical with health informatics with a wide definition covering electronic/digital processes in health while others use it in the narrower sense of hospital practice using the Internet. It can also incorporate health applications connections on mobile phones, referred to as m-health or mhealth.

Objectives

1. To identify the growth of Telemedicine in India.
2. To present the role of Government of India in the promotion of Telemedicine.
3. To describe the challenges posed for Telemedicine.
4. To recognise the opportunities for Telemedicine in India.

Sources of Data

The data used for the study is extensively Secondary data that is the data is taken form Journals, Newspapers, Blogs, Books and websites of various agencies involved in the of Telemedicine.

II. MEANING OF TELEMEDICINE

The use of Electronic data to impart and support healthcare services is termed as Telemedicine. The term "Tele" in Greek means "Distance", while "mederi" in Latin means "to heal". The concept of Telemedicine was once a dream but now it has become a reality, thanks to the advancement in technology and communication. Globally the people living in remote and rural areas are denied quality and timely medical care. Even if there is healthcare centre, the people are offered substandard healthcare specialities since there is a hesitation for the specialist doctors to serve in

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rural areas. But this has been bridged by the concept of Telemedicine, through which the people in remote areas have access to better healthcare provisions.

Definition of Telemedicine[1]

The **World Health Organization (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 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."

Growth of Telemedicine around the globe[2]

The origin of Telemedicine kick started when telegraph and telephone was invented. During the US Civil War, telegraph was used for placing orders of medical supplies and communicating deaths and injuries sustained on the warfront. With the invention of telephone, the era of communication began and major city hospital and prominent doctors installed telephones through which doctors provided medical advice to their patients. At present the usage of telephones are to the minimum since the technological advancements paved way for the modern communication systems by the use of Internet and satellites.

In 1940s radiology images were sent between two distant towns through the telephone lines and this was the first classic example of successful Electronic Medical record transfer, now termed as Telemedicine. In 1950s Teleradiology system was adopted in Montreal. Next, the physicians in Nebraska started to use Video Communication technology for medical purpose.

The National Aeronautics and Space Administration (NASA) played an important role in the initial growth of telemedicine. In early 1960s, as soon as humans began to fly to space, NASA started its efforts to promote telemedicine. In one of its earliest attempts which were from 1972-1975, the Space Technology Applied to Rural Papago Advanced Health Care (STARPAHC) delivered medical care to the Papago Indian Reservation in Arizona. This was initiated to make the specialised healthcare facilities available to astronauts and general healthcare to the people in Papago reservation. The government project that used telemedicine was the partnership between NASA and the Indian Health Services.

Since then there has been steady development in Telemedicine in the US by setting up 26 centers in Alaska by using satellite video consultation to improvise the quality of rural healthcare services. In 1977, interactive audio networks for transmitting medical data and educational programmes ware established in Newfoundland.

Telemedicine industry now uses forward-looking technologies including high-quality video conferencing for effecting medical care to rural arrears that assures better and accurate medical care.

Telemedicine in India[3]

India is named a nation that score low on infiltration of healthcare services in rural areas, particularly concerning secondary and tertiary medical services. In spite of a few activities social insurance offices for country masses, they keep on experiencing the nonattendance of value human services. With the dawn of telemedicine, and its active promotions, a remarkable number of patients residing in remote and rural areas are able to get treatment from specialists living in cities, without having to visit those patients physically.

Telemedicine in India has developed a long way in the course of the most recent two decades. With endeavours of both the administration and private healthcare organizations, telemedicine has possessed the capacity to achieve a large portion of nation's people. Government and private hospitals are collaborating with NGOs to deliver extensive quality healthcare using telemedicine as the medium. Apollo hospitals, Asia Net Foundation, NEC Telemedicine (for North Eastern states), State Governments and many others support and promote the distribution of medical care through telemedicine.

ISRO or Indian Space Research Organisation has made technology available to the population of India through which quality healthcare is discharged to distant areas, rural communities and pilgrimage centres. The Government of India and ISRO have entered into MoU for establishing more than 100 telemedicine centres in remote places through which medical consultation and quality treatment is imparted at almost one-tenth of the cost that private players charge.

NGOs and private institutions play a very vital role in the growth of telemedicine in India. Around 56.1% of the telemedicine centers in India are run by NGOs of which the largest NGO, World Health Partners, has 1100 telemedicine centers operational I India. Hospitals run by the Government and medical colleges such as AIIMS, SGPGI and others have tie-ups with the district and sub-district hospitals of different states to establish telemedicine centers. Major Indian hospitals that run telemedicine centres across India are Apollo Tele Health Services, Narayana Health Telemedicine Centres, Aravind Eye Care etc.

In India, the major areas where telemedicine services are offered are

i) Tele-radiology
ii) Tele-consultation
iii) Tele-ophthalmology

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iv)Tele-ICU
v) Tele-dermatology
vi) Tele-surgery
vii) Tele-pathology and
viii) Tele-psychiatry

Role of Ministry of Health and Family Welfare[4]

The Government of India through The Ministry of Health and Family Welfare has undertaken various schemes for effecting healthcare services using Information and Communication Technologies (ICTs), which has contributed to the penetration of medical care to the unreached. Some of the initiatives are:

i) National Health Portal

In order to create awareness amongst the citizens about health, Government programmes and services in Health Sector, National Health Portal (NHP) provides information to citizens and stakeholders in different languages (currently six languages Hindi, English, Tamil, Gujarati, Bengali, and Punjabi). A Mobile App and a voice portal providing information through a toll-free number are also available.

ii) e-Hospital

e-Hospital is a workflow based ICT solution for Government Hospitals which functions through a generic software which covers major areas like patient care, laboratory services, human resource and medical records management of a hospital.

iii) Online Registration System (ORS)

Online Registration System is a structure to link various hospitals for Aadhaar based Online Registration and appointment system which replaces the over-the-counter OPD registration and appointment system that enables digitalisation of Hospital Management Information System. This application uses the cloud services of NIC. The appointment with various departments of different hospitals is obtained with the help of eKYC data of Aadhaar Number or the patient's name. Unique Health Identification (UHID) number is allotted for new patients.

iv) 'Mera Aspataal' (Patient feedback) Application

This is an initiative by the Government of India to get the patient feedback for the services received at the hospital through user-friendly channels like SMS, Outbound Dialling, Mobile App and Web Portal. The patient can submit the feedback and the feedback will be collected, compiled, analysed and visualised in the form of dashboard accessible to various users at district, state and national level. This Application urges the Government to take corrective actions for improving the quality healthcare facilities.

v) No More Tension Mobile App

This is an Application that imparts information on management of stress and provides solution for the stress of the users based on the calculation of the stress meter. The Application has also music option that enables the users to select different types of music as per their need.

vi) Pradhan Mantri Surakshit Matritya Abhiyan Mobile App (PMSMA)

This Application is a platform for obtaining antenatal service to pregnant women across the country and it also receives feedback and creative suggestions from the users of this App.

III. CHALLENGES FOR TELEMEDICINE IN INDIA

i) Resistance and Ignorance: The people are not aware of the existence of the concept of Telemedicine and the various methods adopted to promulgate this concept. Moreover, there is a hesitation to accept this methodology since they are not educated about the nuances of this concept.

ii) Perception of the Physicians: The doctors themselves are not familiar with the concept of E-medicine and there is much reluctance on their part to update themselves for using modern technological tools to disseminate telemedicine.

iii) Cost Repression: The use of ICT in medical field would add to the cost of providing the medical care to the patients. This would not be beneficial to the providers nor the receivers.

iv) Managing and maintaining Information: The records of all the patients should be properly archived, accessible, retrievable, secure and readable from the remotest location and hence the information should be media rich. This would involve huge expenditure which would again fall on the shoulders of the patients.

v) Non-availability of basic facilities: Nearly one-third of the population of our country live below the poverty line which indicates that they are denied basic facilities like safe drinking water, communication, primary health services, transportation, etc.,. When such is the situation in India there is a big doubt whether people would be able to afford to medical care using ICTs which would be costly than the ordinary treatment costs.

vi) Practical difficulties: There are lots of technical constraints faced in the adoption of E-health services. The use of software and hardware requires the knowledge of an expertise and there is a need for advanced biological sensors and more bandwidth support to enable the correct diagnosis and treatment of diseases. This is truly not present in India.

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IV. OPPORTUNITIES FOR TELEMEDICINE

The Telemedicine world has witnessed an increase in the number of people using this due to its accessibility and convenience. The providers are also being benefitted in many ways. It is estimated that the global telemedicine market will be more than $34 billion by the end of 2020. Some of the latest trends in Telemedicine upto 2017 and beyond are projected below:

i) Built-in Electronic Health Record (EHR) Integration

The integration of electronic records with telemedicine will become a normal course of activity since healthcare professionals in telemedicine use different EHRs.

ii) Data Collection and Data Analytics

The patients' data will be automatically collected when they use the telemedicine services and this information will be utilised to track the patients' progress and send their reports. In order to improvise the telemedicine services, Big Data analytics will play a major role in analysing the data from many patients.

iii) Mobility and Cloud Access

It is estimated that by the end of 2018, 65 percent of the healthcare interactions will occur through mobile devices. According to a 2015 Research2guidance report, almost 80 percent of the physicians use smart phones and medical apps in their regular practice. The medical records are stored in cloud by the Hospitals and Insurance companies so that patients can access their test results 24/7.

iv) Increase in International Agreements

In the forthcoming years, there are possibilities for many hospitals and healthcare providers to establish tie-ups with International medical institutions which will provide access to increased number of patients, bolster international brands and generate added income.

v) Better Clinical Apps to be developed

User friendly Apps will be developed to provide personalised services to the patients. These Apps will be in lie with the standard procedures and will be able to adjust an information displayed and utilised by the physician.

V. CONCLUSION

Telemedicine has drastically changed the way a doctor would interact with and treat patients. The places which were considered unreachable for medical services in the past has become a myth. Telemedicine services not only are beneficial to the patient but also manage efficiently a doctor's schedule. The younger and middle aged population have increasing awareness about Telemedicine which has resulted in huge demand for online consultations and obtaining second medical opinion from specialists from anywhere in the world. Telemedicine has removed the barrier of physical distance and due to easy approachability, convenience and affordability, several patients are going in for online healthcare services which save them from standing in long queues outside the hospitals. It would be most appropriate to say that telemedicine is the future of healthcare, healing and the well-being of the patients.

REFERENCES

[1] https://www.who.int/goe/publications/goe_telemedicine_2010.pdf
[2] https://www.eztalks.com/healthcare/history-of-telemedicine.html
[3] https://www.healted.com/blog/Telemedicine-in-India
[4] https://mohfw.gov.in/about-us/departments/departments-health-and-family-welfare/e-Health%20%26%20Telemedicine
[5] 5.https://www.outsource2india.com/Healthcare/articles/healthcare-industry-telemedicine-trends.asp

 DOI : 10.18231/2454-9150.2019.0406