A REVIEW ON TELEMEDICINE SERVICES IN INDIA

Dr. Gagandeep Kuar[1] and Priya Pinder Kaur[2]
[1]Assistant Professor, Multani Mal Modi College, Patiala,
[2]Research Scholar, Punjabi University, Patiala
[1]mailtogagandeep@gmail.com,[2] sandhukaurpinder@gmail.com

Abstract

Among all the democratic countries of the world, India is one of the largest democratic countries and dispersed in large area. Providing specialized healthcare to everyone at every corner for such population, which is geographically dispread, is a big challenge for the government. Telemedicine has emerged as new scope to accomplish the tough task in more convenient and economically efficient manner. India took various initiatives in telemedicine services in order to reach the large masses. The present research effort is an attempt to explore various emerging trends in telemedicine and elaborate associated issues. Despite of various efforts by both state as well as centre government telemedicine remain unpopular among the masses. In such as scenario, the present exploratory research can also play its significant role to cater attention of government and researcher to take the telemedicine services to the higher end.

Keywords: **Telemedicine, mobile app, ehealth, Healthcare,Heathcare**

INTRODUCTION

Healthy state is the prime responsibility of the government and its duty of the government to provide various healthcare facilities to residents in urban as well in rural area. It has been observed that most of the multi specialist hospitals are located in major cities and large share of pollution residing in rural remain unserved. The healthcare remains neglected area of interest for a long time. It's become even more difficult when government provide limited funds for the healthcare. The government health expenditure is just 1.3 per cent of GDP, which as per National Health Policy 2015; it should be at least of 2.5 per cent. Despite various successes and steps taken up by the government in various fields, still there are many social challenges such as gender inequality, sanitation problem, lack of healthcare, child labor, illiteracy etc. In these cases; telemedicine act like a tool to the people belongs to rural communities that comprises of 68% of India's population providing good healthcare delivery. The telemedicine services were started in 1999 in India.

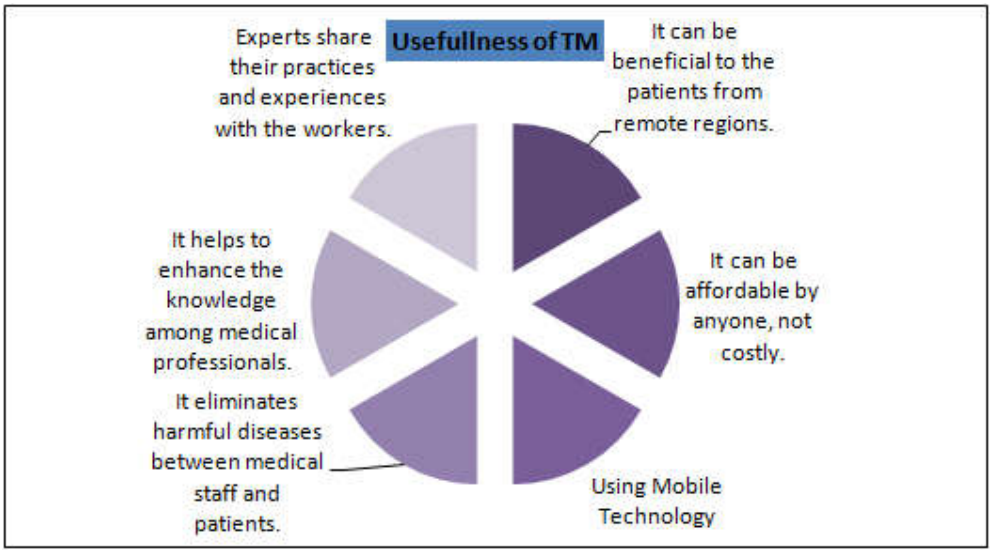

Figure: Usefullness of Telemedicne

During that time, ISRO has been deploying SATCOM telemedicine based network. The various government agencies have taken initiatives for providing good quality healthcare services to the remote and rural areas. About telemedicine, it uses telecommunication and information technology (ICT) to provide clinical healthcare to people who are living at a far distances (Mishra, S.K., 2012). The various usefulness features are displayed in figure. It overcomes the distance barriers and provides access to medical services to rural areas and communities where medicines are not easily available. It saves lives both in critical conditions as well as in emergency situations. ICT permits the communication between patient and medical staff with reliability and conveniences. It also helps to transmits medical and health data from one site to another. Government of India has planned to expand telemedicine facilities to South Asian and African countries by implemented various national level projects Mathur P et al. (2017).

LITERATURE REVIEW

The various research studies have been reported which not only explore various issues related to telemedicine in different regions of the country but also suggest various ideas to improve telemedicine services in India. Some of the studies are discussed below:

Ahmed SS et al. (2016) proposed the remote patient monitoring system using smart phones. It is basically designed for rural Indian population who suffers from hypertension and hypotension. The system also designed to capture pre-cardiac arrest situation for people and take precautions from medical/healthcare. They used biomedical sensors and Microprocessor for performing analysis.

Viswanathan Mohan et.al (2014) conducted a study on Telemedicine in Diabetes care in rural area. According to the results of Indian Council of Medical Research's study estimated that 62.4 million people are having diabetes. Moreover many efforts have been made to diabetes in urban areas, while 70% of population is from rural areas. The Percentage increased due to lack of awareness due to illiteracy, limited access to healthcare due to transportation problems, lack of trained professionals in Diabetes. The screening for diabetes is hardly done in rural areas which results in undiagnosed and improper treatment. The research came up with diabetes healthcare model to care patients in more affordable manner using a mobile van having equipments to diagnose and in case of emergency they

can communicate to expert through trained technicians using satellite communication. The research concluded that the cost effectiveness healthcare can be achieved through telemedicine projects.Bhatia JS et al. (2014) designed a research model, named as knocking Telemedicine Technology Users for healthcare professionals using different survey methods to evaluate the usage impact of various discrete networks on telemedicine capabilities in India. The ICT infrastructure in India slightly shifted from conventional technical components to high speed optic fibre based broadband connectivity networks. The study also states it not only marked improvement, but leads to advancement and sustainability in existing telemedicine capabilities as well.

Bindra G JS et al. (2014) proposed that for remote clinical care and consultation where doctors cannot access the records of patients easily & leads to wastage of half of the time in accessing files, electronic imaging instruments is used at that place to avoid cumbersome activities. By using telemedicine, the problem related to medical records has been solved. AMEDD (Army Medical Department) has drawn success out of 165 hospitals to simply 62 hospitals within force structure.

Mishra SK et al.(2011) proposed that there is no health insurance policy for the country as government focused on healthcare by supported three tier system. Both private and government sector actively participated in Tele-health programmes. Growth has been seen in telemedicine and e-health schemes provided by Ministry of Health and family Welfare. Similarly Devaraj SJ et al. (2011) proposed that the current major issues in wireless telemedicine system are patient monitoring, securely transmission of data and effective medical video compression that has been solved by new advanced technologies and also discusses future challenges

TELEMEDICINE SERVICES IN INDIA

Telemedicine is a "Non-Profitable" sponsored project by Rabindranath Tagore International Institute of Cardiac Sciences (RTIICS) Calcutta, Indian Space Research Organization (ISRO), Hewlett Packard, Naryana Hrudayalaya (NH) Bangalore and the seven North-Eastern state government of India. Healthcare software system of telemedicine has been developing by Center for Development of Advanced Computing (C-DAC) which supports – Tele-cardiology, Tele-pathology and Tele-Radiology (Kumar Arun et al.(2015). It used to connect three premiers medical Institutions of the country named as All India Institute of Medical Sciences (AIIMS) New Delhi, Sanjay Gandhi Post Graduate Institute of Medical Sciences (SGPGIMS), Lucknow and Post Graduate Institute of Medical Education Research (PGIMER), Chandigarh. In 2007, first Ayurvedic telemedicine healthcare center in India was introduced by Partap Chauhan, Indian Ayurvedic doctors and Director of Jiva Ayurveda. The major stake holders in Telemedicine industry are Indian Space Research Organization (ISRO), Department of Information Technology (DIT), Ministry of Health and Family Welfare (MOH&FW), Ministry of External affairs (MEA), Centre and state governments.

In 2016, from 22nd April to 21st May, Telemedicine Mobile Van was deployed at Ujjain Kumbh Mela from SGPGI Lucknow. This Mobile Van has various facilities and medical equipment used for awareness program related to health issues, non-communicable diseases (NCD) among the pilgrims visiting to kumbh mela. Specialized doctors from SGPGI Lucknow, Bhopal and AIIMS are appointed there for great treatment using VSAT connection provided by Department of Space (DOS). Telemedicine healthcare ICU involves live interaction with HD video, real time experience, audio communication between healthcare provider and specialist at regional ICU's.

The government of India now-a-days spread telemedicine across the country. With Indian Space Research Organization (ISRO), MoU was signed by Union Minister of health for growth of telemedicine. Presently, it spreads into rural areas also i.e. remote places. The consultation and treatment came to one-tenth cost since it saves time and covering long distances. During the poor cellphone coverage in hilly areas like Himachal Pradesh, J&K, Uttrakhand, ISRO provides satellite links which further connected to telemedicine healthcare centers to connect with specialized hospitals in Chandigarh, Srinagar, Delhi, Puducherry.

The primary aim is providing accessibility facilities in remote areas, at far long distance places and pilgrimage centers. All telemedicine healthcare nodes had VSAT system, conferencing (video + audio) equipment along with instruments used for diagnosis like X-Ray scanner and ECG machine. Various mobile apps have been launched so far namely:

Table: Various mobile apps have been launched so far namely

Tel-Mobile App	Description
Vaccine Tracker	Vaccine Tracker (Indradhaanush Immunization) launched in April, 2016 supports parents to track immunization of their children and helps them to ensure complete and timely vaccination.
India Fights Dengue	India Fights Dengue- launched in April, 2016. Enables a user to check dengue symptoms, get nearest hospitals and blood bank information and also shares feedback.
NHP Swasth Bharat	NHP Swasth Bharat (information dissemination on disease, lifestyle, first aid) launched in April, 2016. NHP Directory Services (provides information related to hospitals across India) launched in June, 2015
No More Tension	No More Tension Mobile App (information on stress management related aspects) launched in November, 2016.
Pradhan Mantri Surakshit Matritva Abhiyan	Pradhan Mantri Surakshit Matritva Abhiyan Mobile App (for reporting pregnancy care related information from across states) launched in November, 2016.
Mera Aspataal Mobile	Mera Aspataal Mobile App (for reporting pregnancy care related information across states) launched in August, 2016.

Source: Report published by NHP India

There are various other mobile applications which are catching attention of public at large.

Mother and Child Tracking System (MCTS), Reproductive Child Health App (RCH).

Kilkari, TB Patient Monitoring System “Nikshay”, Tobacco Cessation Programme., M-Diabetes Programme.

The continual growth in mobile, wireless communication and technology in health sector leads to more advancement in society, results to comfortable zone for an individual with telemedicine technology. In this era, the growth of virtual medical centers benefitted remote & rural peoples by providing clinical services at very cheap rate where possibility of reach out to those areas is low. These all carried out with the help of vendors providing medical care in stroke & mental health. In future, we also need to secure the data by improving security from simple log-ins to specialized

passwords. So that only concern and right member will be able to fetch medical data and can store information in the database.

CONCLUSION

The telemedicine has emerged as new platform to serve large population with cost effective and convenient methods. The reason behind the success of telemedicine is the adoptability of new technology among the masses and interest of stake holders. Telemedicine no more limited to the online web based services but extends services through mobile based application. In current scenario, telemedicine using advanced technology seems to be very convenient and easy method to use.

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