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A rise of Telemedicine Industry in India

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Abstract: The virus from Wuhan shook the entire world. Almost 22 million people infected and 7000000 people died. Economy of many countries moved to upside down. Covid had created negative impact on GDP, employment, slashed the share market, and changed the track of economic growth. Irrespective of these changes some sectors extended its operation. Telemedicine is one among these. Because it is protective, less expensive and convenient to utilize during pandemic period. With this context, present paper aimed to conceptually analyze the existence of Telemedicine in India and its growth during pandemic.

Keywords: Telehealth, Telemedicine, Coronavirus, pandemic, India

1. A RISE OF TELEMEDICINE INDUSTRY IN INDIA

"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."

- World Health Organization

World health organization published in its weekly operational update about Covid-19 on February 2021 confirmed cases 102399513 and confirmed deaths 2217005. Its shows the impact what coronavirus created on global health. This Covid outbreak adversely affected the health of the people in various ways. . Patients with different health issues hesitated to approach hospitals. There is huge drop outs in patient's entry in to hospital. Telemedicine has increased its significant during pandemic. It played a major role in maintaining health services. Telemedicine applications has been used as an alternative health delivery system during pandemic.

Telemedicine Defined as "an application that is used to transfer medical information which is established by medical experts or patient from one location to another using information communication technologies (ICT) as mode of communication".

The following studies enlighten the significance of telemedicine during pandemic;

Samar rahi, M M Khan & M Alghizzawi (May 2020) found that factors such as service quality, computer self- efficacy and performance expectancy can boost the patients attitude towards usage of telemedicine.

Ryu s in his article discussed the perceptive on WHO on telemedicine. This article examined that World health organization recommended the usage of e-health applictions is more effective and less expensive for health surveillance.

Kashyap R (2020) investigated Internet of things (IOT) applications are useful to track the patient record, Monitoring patients in regular time interval and correct drug patient associations and early detection of clinical deterioration.

Venkatesh et al investigated the factors influencing the user adoption of wireless sensor network applications. He found that performance expectancy, effort expectancy, facilitating condition and social influence were the factors highly influencing the Wireless sensor applications.

Grossman & grandly found that telemedicine is the one of the integral part of health care provision. Demand for telehealth has increased due to the development of information and comunitcation technology. It provide many health care services include abortion. Last decade abortion provider using telemedicine as platform which is more safe, effective and well-liked by patients.

Telemedicine in India

Being a seventh largest country and second populated country in the world. Indian couldn't achieve the target of World health organization standards of 1:1000 Doctor –patient ratio. India is struggling with 0.78:1000 ratio. This proportion clearly revealed that shortage of doctors in India. Its further worsen in rural area. With the growth of communication technology especially with the combination of satellite communication and Information technology the basic minimum health care needs of rural population can be addressed.

- Indian space Research organisation played a significant role in implementing telemedicine/telehealth to rural and undeserved population Through INSAT satellites ISRO created the connectivity between patients at remote places and specialist doctors at urban areas.
- Telemedicine in India officially launched in March 30th 2000.First telemedicine unit commissioned by former US a president Bill Clinton in the village of Aragonda in Southern India round 200 km away from Chennai.
- Apollo Telemedicine Networking Foundation (ATNF) has been selected by Government of India as a partner to provide tele education and telemedicine to 53 member states of African Union.
- In 2001 first Telemedicine Pilot project was launched by ISRO. The mission was successful with the collaboration of ISRO and Apollo hospital at Chennai with Apollo rural Hospital at Aragonda village in Chittor district of Andhra Pradesh. This project successfully treated more than 25000 patients.
- In 2002 Karnataka Telemedicine project connected with Narayana Hrudayalaya at Bangalore district hospital.
- Satcom based Telemedicine technology pilot projects have been launched in various parts of the country.
- Many states have introduced the Telemedicine in regular basis. Karnataka, Chhattisgarh, kerala and Jarkand initiated the satellite based telemedicine facility in all district hospitals.
- ISRO extended its telemedicine endeavor in kargil, Leh, Andaman and Nicobar Islands North-eastern states.

Brief History of telemedicine:

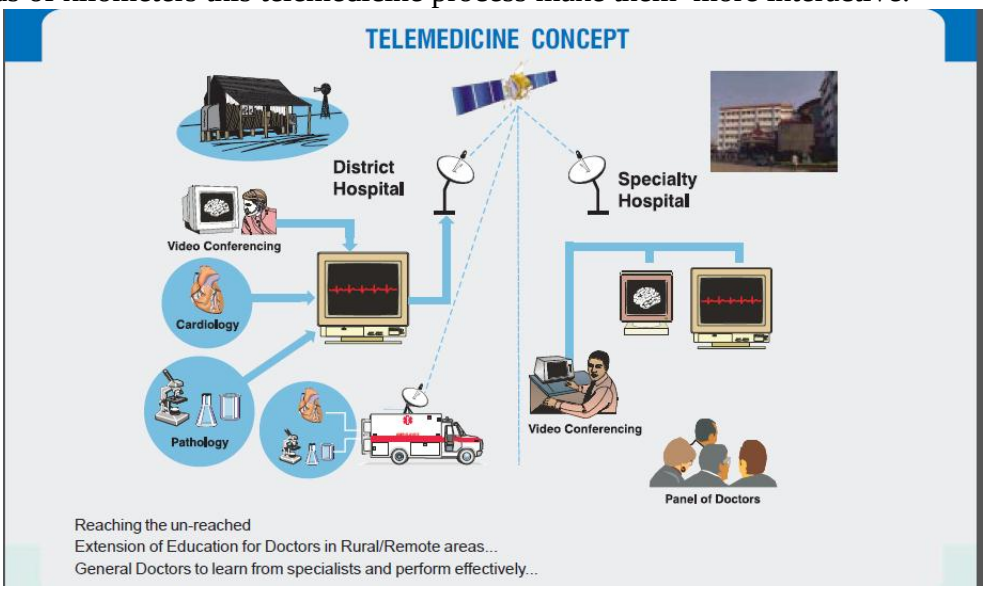
The Evolution of Telemedicine

- 1876 -Alexander Graham Bell filed the patent. He launches the beginnings of Telecommunication Field.
- 1924 - Dr.Hugo Gernsback envisioned the tele dactyl. This equipment projected the video to examine the patient from far away.
- 1950's - Close-circuit television experiments started.
- 1959-1964 -The first video link created between Nebraska psychiatric Institute in Omaha and Norfolk state hospital. It covered 112 miles distance.
- 1960's -NASA invested money on telemedicine field in order to provide healthcare to astronauts.
- 1950's - Close-circuit television experiments started.
- 1967 -First telehealth system tested in Boston logan Airport and Massachusetts General Hospital in order to connect Paraprofessionals to physician-patient.
- 1970's - golden age of Telemedicine in USA. Government funded range of telemedicine programs to improve healthcare access in rural areas.
- 1972-1975 -NASA partners with the Indian Health services to deliver remote healthcare to the Papago Indiana reservation in Arizona.
- 1974 -NASA tested minimum video requirements to do a remote medical diagnosis.
- 1989 -First time a patient was successfully defibrillated by telephone. It's the year of Introduction of World Wide Web.
- 1993 -American Telemedicine Association started its operation as Non -profit organization
- 2000 - Video chat programs and apps were getting popular. It's a step stone for Telemedicine

Concept of Telemedicine

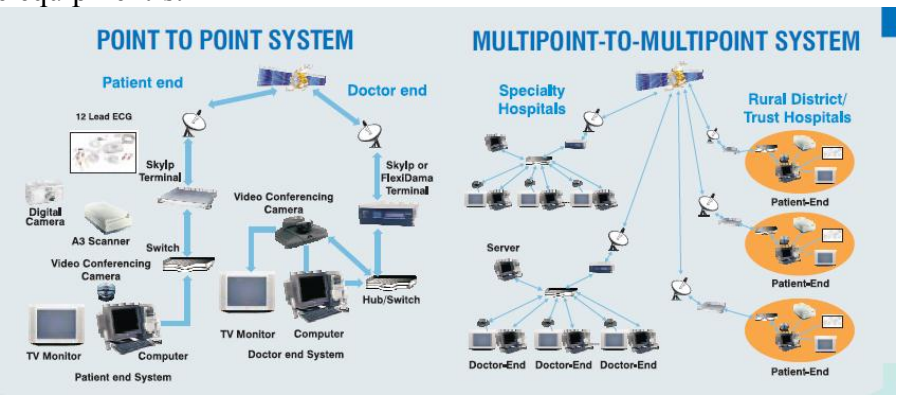
Telemedicine is a pool of communication, Information, Biomedical engineering Medical science technologies. Telemedicine systems have the combination of both hardware and software with the support of Specialist doctors in one end and patients in other end. Diagnostic equipment's like ECG, Microscope, camera and X-ray also attached with patient

end. Through the Digital Data packets ie link through the satellite medical images and other data of patients can be sent to specialist either in advance or on a real time basis. Based on this information specialist can interact with the patient and diagnosis the issue and suggest appropriate medicine through Video conference .Though the Doctor and patient separated by thousands of kilometers this telemedicine process make them more interactive.



Source: ISRO Telemedicine initiative Report (2005)

Telemedicine process have three pattern such as *Point to point system* ie Doctor to patient or patient to doctor with the support telemedicine equipment's and next one *Point to Multipoint system* ie single patient can connect to any of the specialist doctors within the hospital and the third one *Multipoint to Multipoint* system ie from different patients ends (patients from different locations) to contacting different specialty hospital or specialist through telemedicine equipment's.



Major Criteria of Telemedicine technology

I. Treatment segment **II. Education & Training segment**

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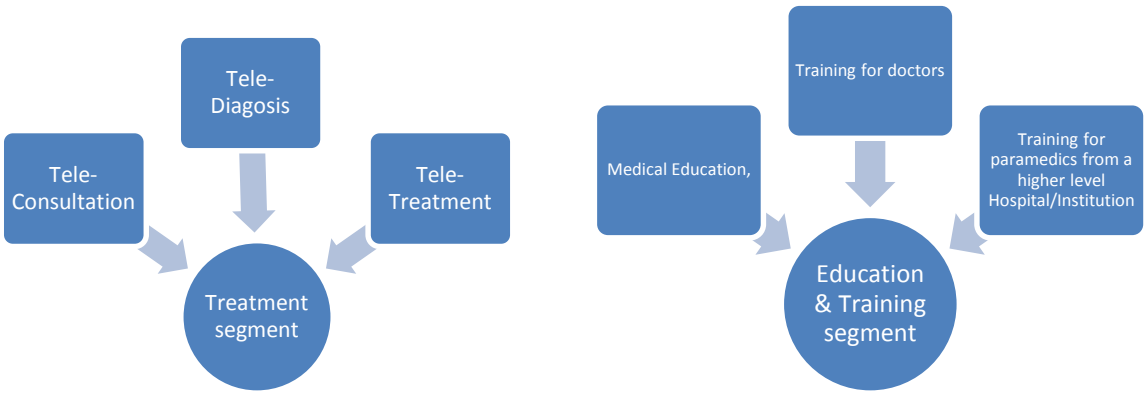
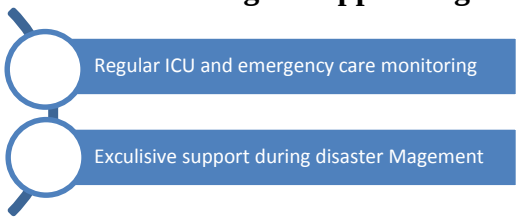


III. Monitoring & Support Segment



In India Telemedicine program with the support of ISRO's launched in the following thrust areas;

- Rural and remote hospitals and specialty hospitals
- Continuing Medical Education (CME)
- Mobile Telemedicine units
- Disaster Management support (DMS)

Top players of Telemedicine companies in India:

Company Name	**Total users**	**Services**	**Records**
Practo	47.48 Million	• Diagnostic Centres • Fitness Centres • Medical Delivery	• Founded in May 2008 • Network with 15 countries • 200000 doctors are associated • 50 Millions appointments per year
1 mg	26.18 million	• Online consultancy • Diagnostic Centre • E-pharmacy	• Founded in May 2015 • Network with 1000 and above cities across the nation • Network with licensed and verified pharmacies only • 30 lakhs consultation done.

Lybrate	25.18 million	• Health communication delivery platform • Maintaining Health wiki	• Founded in 2013. • India's first mobile healthcare communication platform. • 90000 thousands verified doctors are working in this platform.
Medlife	2.54 Million	• Online consultation • E-health records e-prescription • Producing health products • E pharmacy	• Founded in 2014 • Collaboration with Online digital payments portals • Online consultation avilable24/7 • Network with 29 states and 30 specialists doctors • Consulted 10 million customers
Portea Medica	7.3 Million	• Healing theory at home • Producing medical equipment's • Counselling • Diagnostic centres	• Founded 2013 • Provide home healthcare services • Network with 16 states • Consulted 2.5 million patients. • Partnership with 50hspitals , pharmaceutical and insurance companies

Challenges faced by Indian Telemedicine Companies:

- Connectivity issue is major challenge in rural areas. Due to this effective implementation of telemedicine units is not possible.
- Cost effective hardware and software tools is a next level challenge to the telemedicine operators.
- Registering, certifying, standardizing and monitoring the telemedicine units still not uniformly formalized by the government. Recently the medical council of India with NITI Aayog released the updated guidelines for Telemedicine units on March 2020. Till that there were no clear ideas about the operation of telemedicine units.
- More short run courses for trainers and users. So that usage of Telemedicine become more familiar among the stake holders.
- Government should allocate subsidies and grants to telemedicine units which exclusively serving for rural and undeserved population.
- Indian telemedicine unit should get international recognition. This will helpful to do overseas tele consultancy which will be best source of revenue generation.

2. CONCLUSION:

At global level telemedicine is a successful concept .Soon in India also it is going to be an integral part of Medical practice. This is concept not only associated with technology but also with People mindset. In 2006 republic day speech former president Abdul Kalam stressed the

significance of usage of telemedicine across the nation. He also stated that this reformation in medial field can reduce the gap between privileged and underprivileged population in India. Widespread usage of Information and communication technology in all the level of population this can be possible.

3. REFERENCES:

[1] Abo-Zahhad M, Ahmed SM, Elnahas O. A wireless emergency telemedicine system for patients monitoring and diagnosis. Int J Telemed Appl 2014;2014.
[2] Albarrak AI, Mohammed R, Almarshoud N, Almujalli L, Aljaeed R, Altuwaijiri S, et al. Assessment of physician's knowledge, perception and willingness of telemedicine in Riyadh region, Saudi Arabia. J Infect Public Health 2019.
[3] Alaboudi A, Atkins A, Sharp B, Balkhair A, Alzahrani M, Sunbul T. Barriers and challenges in adopting Saudi telemedicine network: the perceptions of decision makers of healthcare facilities in Saudi Arabia. J Infect Public Health 2016;9(6):725–33.
[4] Fadhil A. Beyond patient monitoring: conversational agent's role in telemedicine & healthcare support for home-living elderly individuals. Xavier preprint 2018;1803, 06000.
[5] Grossman, D., & Grindlay, K. (2017). Safety of medical abortion provided through telemedicine compared with in person. Obstetrics & Gynecology, 130(4), 778–782.
[6] Healthline, Retrieved 10 April 2020, from Here's what could happen if doctors get COVID-19; 2020 https://www.healthline.com/health-news/what- happens-if-nurses-and-doctors-get-covid-19.
[7] Hsu W-Y. A customer-oriented skin detection and care system in telemedicine applications. Electron Libr 2019.
[8] Healy JC. Implementing e-health in developing countries: guidance and princi- ples. ICT applications and cyber security division (CYB). Policies and Strategies Department. [monografía en Internet]. Bureau for Telecommunication Development International Telecommunication Union; 2008.
[9] Kashyap R. Applications of wireless sensor networks in healthcare IoT and WSN applications for modern agricultural advancements: emerging research and opportunities. IGI Global; 2020. p. 8–40.
[10] Kayyali R, Peletidi A, Ismail M, Hashim Z, Bandeira P, Bonnah J. Awareness and use of mHealth apps: a study from England. Pharmacy 2017;5(2):33.
[11] Pai RR, Alathur S. Assessing awareness and use of mobile phone technol- ogy for health and wellness: insights from India. Health Policy Technol 2019;8(3):221–7.
[12] Pol P, Deshpande AM. Telemedicine mobile system. Paper presented at the 2016 Conference on Advances in Signal Processing (CASP) 2016.
[13] Rahi S, Abd Ghani M. Does gamified elements influence on user's intention to adopt and intention to recommend internet banking? Int J Inf Learn Technol 2019;36(1):2–20, http://dx.doi.org/10.1108/IJILT-05-2018-0045.
[14] Ryu S. Telemedicine: opportunities and developments in member states: report on the second global survey on eHealth 2009 (global observatory for eHealth series, volume 2). Healthc Inform Res 2012;18(2):153–5.
[15] Quest H, From: COVID-19 frequently asked questions, 2020; 2020 https:// patients.healthquest.org/novel-coronavirus-covid-19-update-2-2/nuvance- health-community-events-and-volunteersd-for-covid-19-2-2/.

[16] West DM. Using mobile technology to improve maternal health and fight Ebola: a case study of mobile innovation in Nigeria, 19. Center for Technological Inno- vation at Brookings; 2015. p. 308–12.
[17] Van Dyk L. The development of a telemedicine service maturity model. Stel- lenbosch: Stellenbosch University; 2013.
[18] Venkatesh V, Thong JY, Xu X. Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology; 2012.