A Study on Telemedicine: Past, Present and Future

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ABSTRACT

Telemedicine is also known as telehealth. With the unexpected COVID-19 pandemic, telemedicine was adapted rapidly in India. Healthcare professionals around India and the globe have started to move towards technology, by accepting telemedicine. It helps the patients to stay connected in times of COVID-19. It ensures safety of the high-risk patients.

This study is purely based on secondary data from authentic sources. It would elaborate the history, present and future of telemedicine in India. The facts about the past, present and future gives us various insights on telemedicine, its growth, development etc. It also increases our understanding about the future of telemedicine. Advantages and disadvantages stated will enlighten us about the value-based tool.

Keywords: *Telemedicine, telehealth, telemedicine COVID-19, telemedicine growth*

INTRODUCTION

Telemedicine, which literally means “healing at a distance”, signifies the use of Information and Communication Technology to improve patient outcomes by increasing access to care and medical information. The World Health Organization has defined Telemedicine as, “The delivery of health care services, where distance is a critical factor, by all health care 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 health care providers, all in the interests of advancing the health of individuals and their communities”.

In the time of pandemic, Telemedicine has played and playing a major vital role in the world. The healthcare professionals are widely using the telemedicine feature to consult, diagnose and treat their patients at the time of pandemic whenever their patients need their help. Telemedicine is a tool which is been by the hospitals widely to stay connected with their patients. The importance of the tool has been widely understood by the people. And, this paper will elaborate about the history of telemedicine in India, usage of telemedicine during covid-19 in India and the future of the telemedicine in India. Further, the study will discuss about the advantages and disadvantages about the telemedicine for the better understanding about the valuable tool of healthcare.

MATERIALS AND METHODS

For this analysis, the data and documents were collected from various sources which includes newspaper articles, google scholar and the verified articles published in the blogs. The data was collected from the various sources and verified for the authenticity.

DISCUSSION

India is a large nation with a population of more than 136 crores of sundry people. Due to this reason, the concept of telemedicine was introduced for the efficient public health management though out the country. In the year 2001, Indian Space Research Organization (ISRO) made a modest telemedicine technology which was introduced as the “Telemedicine Pilot Project”, linking Chennai's Apollo Hospital with the Apollo Rural Hospital at Aragonda village in the Chittoor district of Andhra Pradesh.

A few noteworthy examples of the successfully established telemedicine services in India include mammography services at Sri Ganga Ram Hospital, Delhi; oncology at Regional cancer center, Trivandrum; surgical services at Sanjay Gandhi Postgraduate Institute of Medical Sciences, School of Telemedicine and Biomedical Informatics, and many more. In the past few years, ISRO's telemedicine

network has come a long way. It has expanded to connect 45 remote and rural hospitals and 15 super specialty hospitals. The remote nodes include the islands of Andaman and Nicobar and Lakshadweep, the hilly regions of Jammu and Kashmir, Medical College hospitals in Orissa and some of the rural/district hospitals in other states.

Telemedicine is broadly classified into five types:

According to the timing of the information transmitted:

- Real time or synchronous telemedicine (where the sender and receiver both are online at the same point of time and 'live' transfer of information occurs).
- Store-and-forward or asynchronous telemedicine (where the sender stores the information databases and sends it to the receiver at a convenient point of time, and the receiver can review the data according to his convenience).
- Remote Monitoring type of telemedicine, also known as self-monitoring or self-testing. Remote monitoring uses a range of technological devices to monitor health and clinical signs of a patient remotely.
- According to the interaction between the individuals involved:
- Health professional to health professional (giving easier access to specialty care, referral and consultation services).
- Health professional to patient (providing healthcare to the unreached population by giving them direct access to a medical professional).

In the time of pandemic, each and every type of telemedicine was used in the country for the benefit of the people. Both the public sector and the private sector plays a major role to develop telemedicine and provide proper care and treatment for the people for the timely concern.

According to the report of Rise of Telemedicine-2020, while physical appointments went down by 32%, a three times increase was seen in the number of people using online consultations, including 26% with general practitioners, 20% in dermatology, 16% in gynecology and 7% with others like Gastroenterology, ENT, and pediatrics. Delhi, Mumbai and Chennai people who live in metro saw an average of increase of 16 times in consultation with ENT and non-metros saw a growth of 7 times than the previous year. Notably, more elderly people were now reported getting used to technology.

According to the report, there was a 502 percent increase in online consultations from people above the age of 50 during this crisis, which contributed to 12 per cent of overall consultations, as compared to just five per cent from the previous year. The report has been culled from the experience of Practo app users between March 2020 and November 2020. Interestingly, more women opted for such consultations with men: women ratio at 68:32 as compared to 75:25 last year. Gyneacologists and general practitioners were two of the most consulted specialists by women. The report also highlighted out how late-night consultations saw an increase of 25 per cent owing to work responsibilities during the day. The telemedicine was used widley during the pandemic time and the usage of telemedicine will grow predominantly in the coming days.

Doctors, physician and other healthcare providers have turned to the growing technology to connect with their patients. COVID-19 has boosted the acceptance of telemedicine for both patients and physicians. Studies say that telemedicine would increase post COVID-19 pandemic. The fear from patients and change in the payments have caused a spike in the telemedicine facilities. Some patients have really got comfortable with video check-ups, and continue to so. It is also said that telemedicine relates to value-based care. The future of telemedicine comes with a big dilemma, some of the physicians will recede the use of telemedicine after COVID-19. As the pandemic grows, it helps us to monitor the usage and comfort level of telemedicine. Few changes for future with regard to telemedicine are;

- **Optimizing telehealth for future needs:** Telemedicine has found its way to people's home. The expectation has shot up, all the signs that are given out point to more healthcare at home. Telemedicine has been a longstanding leader in the field, focusing on remote patient monitoring and intensive care. In future, healthcare services will be used to improve primary care and urgent care. It will also aim to improve long term care services like dialysis centres, clinical centres.

- **Improving long term care**: Long term care facility users were the most affected during COVID-19. Chronic conditions, multiple conditions, and patients who use facilities like dialysis were affected

badly. Development of inpatient and outpatient telemedicine programs are planned for the future. The goals of these will extend beyond just physician consultation.

- **Expanding access with Medicare:** Telehealth is covered for both existing and new patients with two- way real time audio and video technology.

ADVANTAGES AND DISADVANTAGES OF TELEMEDICINE

Advantages:

- Lower costs: Some research suggests that people who use telemedicine spend less time in the hospital, providing cost savings. Also, less commuting time.
- Improved access to care: Telemedicine makes it easier for people with disabilities to access care. It can also improve access for other populations, including older adults, people who are geographically isolated, and those who are incarcerated.
- Preventive care: Telemedicine may make it easier for people to access preventive care that improves their long-term health. This is especially true for people with financial or geographic barriers to quality care.
- Convenience: Telemedicine allows people to access care in the comfort and privacy of their own home.
- Slowing the spread of infection: Going to the doctor's office means being around people who may be sick, often in close quarters. This can be particularly dangerous for people with underlying conditions or weak immune systems. Telemedicine eliminates the risk of picking up an infection at the doctor's office.
- This system creates communication among patients & healthcare professionals maintaining convenience & commitment. Moreover, through Telemedicine medical information and images are kept confidential and safely transferred from one place to another.
- It saves lives in the emergency situations, while there is no time to take the patient at a hospital.
- In many rural communities or remote places or post-disaster situations, consistent healthcare is unavailable, telemedicine will be the solution.
- Modern innovations of information technology such as, mobile collaboration has enabled easy information sharing and discussion about critical medical cases among healthcare professionals from multiple locations.
- Telemedicine has facilitated patient monitoring through computer or tablet or phone technology that has reduced outpatient visits. Now doctors can verify prescription or supervise drug oversight. Furthermore, the home-bound patients can seek medical-help without moving to clinic through ambulance.
- This system also facilitates health education, as the primary level healthcare professionals can observe the working procedure of healthcare-experts in their respective fields and the experts can supervise the works of the novice.
- Telemedicine eliminates the possibility of transmitting infectious diseases between patients and healthcare professionals.
- Reduced overhead expenses: Providers who offer telemedicine services may incur fewer overhead costs.
- Additional revenue stream: Clinicians may find that telemedicine supplements their income because it allows them to provide care to more patients.
- Less exposure to illness and infections: When providers see patients remotely, they do not have to worry about exposure to any pathogens the patient may carry.
- Patient satisfaction: When a patient does not have to travel to the office or wait for care, they may be happier with their provider.

Disadvantages:

- Insurance coverage: Not all insurers cover telemedicine. Only 26 states currently require insurers to cover or reimburse the costs of telemedicine. However, these laws are constantly changing.
- Protecting medical data: Hackers and other criminals may be able to access a patient's medical data, especially if the patient accesses telemedicine on a public network or via an unencrypted channel.
- Care delays: When a person needs emergency care, accessing telemedicine first may delay treatment, particularly since a doctor cannot provide lifesaving care or laboratory tests digitally.
- The overall cost of telecommunication system, especially data management apparatus and practical training of medical professionals is great.
- Virtual clinical treatment decreases human interaction among the healthcare professionals and patients that increases the risk of error in clinical services, if the service is delivered by inexperienced professional.
- Low quality of health informatics records, like, X-ray or other images, clinical progress reports, etc. run the risk of faulty clinical treatment.
- Telemedicine system requires tough legal regulation to prevent unauthorized and illegal service providers in this sector.
- Technological concerns: Finding the right digital platform to use can be challenging. Clinicians must also ensure that the telemedicine program they use is secure and fully compliant with privacy laws.
- An inability to examine patients: Providers must rely on patient self-reports during telemedicine sessions. This may require clinicians to ask more questions to ensure that they get a comprehensive health history.

RESULTS

Telemedicine has grown exponentially during the pandemic, making it the safest and easiest option. The technology of telemedicine was a quick adaptation during the COVID-19 lookdowns. It is also preferred by many doctors and patients for being comfortable to access at home. Telemedicine was a boon for chronic illness patients during the pandemic. Telemedicine is still growing at a faster pace to make the best out of our technology.

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