TELEHEALTH TECHNOLOGY AND HEALTHCARE

Abstract

Telehealth refers to the use of information and communication technology to provide health care services and medical education to the patient in distance rather than face-to face service. In telemedicine, clinical care to the patient is provided remotely using telecommunication and electronic technology. Use of telehealth to provide health care services have many advantages, such as cost savings, convenience, provide care to patients with mobility limitations, or in remote areas who don't have access to local physicians or clinic. Disadvantages and challenges of telehealth are also present such as handling of emergency conditions, surgeries, lab investigations, ability to perform limited physical examination, and every type of visit is not possible remotely. There are some ethical issues and conflicts in the Telehealth services, such as security breaches, issues in various aspects of technology usage, inaccurate and obsolete data etc. The quality and accuracy of online information and patient's medical information confidentiality also is of deep concern. Telehealth service providers must rigidly follow principles of confidentiality and patient privacy. Although there are some disadvantages of telehealth, the expansion of telehealth services is expected to grow and has potential to improve patient satisfaction by delivering high quality and value of care services.

Keywords: Telehealth, Telecare, Webcams, Microphone.

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I. INTRODUCTION

In many parts of the world, people who live in distant places must overcome physical and financial obstacles in order to access healthcare services. An elderly individual with multiple comorbidities cannot frequently visit clinics or hospitals for the treatment of chronic illnesses. Daily parameter monitoring is also necessary for non-communicable disorders. With the aid of a variety of information and communication technologies, healthcare services are offered to regions with inadequate transportation infrastructure. The meaning of the word "tele" is "reaching over a distance," and it is derived from ancient Greek. (1). Clinical and non-clinical healthcare services, such as health education and training, patient management, vitals monitoring, counselling, etc., are delivered remotely through the use of various telecommunications technology and the internet in telehealth (2). A component of telehealth is telemedicine, which involves remote delivery of clinical services. For people in remote and difficult-to-reach places to contact a professional in another location, telemedicine is crucial (3). According to one definition of telemedicine, it is "the delivery of healthcare services remotely by the healthcare service providers with the aid of communication technology" (4).

In telemedicine, clinical services are delivered remotely via teleconsultation, telediagnosis, etc.; in contrast, telehealth services go beyond telemedicine and include remote delivery of preventive healthcare, medical education, and training for healthcare professionals. Using telehealth technology, the physician, nurse, counsellor, and other healthcare professionals can deliver medical services remotely. The word "eHealth" refers to medical services that are delivered electronically over the Internet (5). eHealth includes mobile health. Mobile wireless technologies which are both affordable and secure, is employed in the healthcare sector to deliver healthcare services. Digital health is a broad phrase that encompasses developing fields like eHealth that leverage cutting-edge ICT to deliver high-quality healthcare services (6).The first recorded telehealth interaction occurred in 1876 when Alexander Graham Bell, the inventor of the telephone, used the device to contact his assistant in order to seek medical help for the treatment of chemical burns (7).

The history of contemporary telemedicine began in the Netherlands in the early 19th century with the transmission of heart rhythms via the telephone. Radio consultation centres were operationalized using radio frequency in Europe in the 1920s, and radiographic pictures were transferred for diagnosis in Pennsylvania via telephone transmission in the 1940s (8–9). Over time, telemedicine gained official recognition. In the 1950s and 1960s, complex patient medical data and video transmissions were used to handle cases remotely (10). In Gwalior, India, a telecardiology system was built in 1975 (11).

In the 1980s, the medical field of radiography completely embraced telemedicine. Instant access to radiological images was made possible via the Picture Archiving and Communication System (PACS) at several hospitals. Reports can be accessed using teleradiology from any location in the world. Special tools used in telehealth include the tele-thethoscope, tele-ECG, and tele-pathology. Telehealth is the practise of delivering healthcare services through a variety of communication technologies, including radio, telephones, television, mobile phones, and the Internet. With time, the technology utilised in telehealth and other cutting-edge procedures has undergone significant modification. Even today, many regions of the world still favour in-person consultations with doctors over teleconsultations (12).

Healthcare professionals and patients were pushed to use telehealth technologies as a result of the COVID-19 epidemic. The healthcare team deployed telehealth technology to manage COVID-19-positive cases, as well as for numerous preventive treatments and high-quality training of health personnel during the lockdown times. People were able to treat their COVID-19 infection by overcoming physical and financial obstacles with the aid of telehealth technologies (13–14). The clinician or service provider does the history taking, modified physical examination, diagnostic testing, assessment, and management from a distance using telecommunications technology. Additionally, students, professionals, administrators, and managers of the healthcare delivery system are trained and given the opportunity to grow their skills using telehealth technology (15–18). Only telehealth technology makes it possible for patients and doctors to communicate in real time while separated from one another (19). The development of electronic communication is to blame for the considerable changes in health care delivery. An elderly individual with many chronic conditions requires significant medical knowledge even for basic care and monitoring (20). A substantial percentage of patients must be treated by primary care physicians (21). When offering patient-centered, enhanced clinical care remotely, information and communication technology is very essential. (22).

Telehealth incorporates automated communication between doctors and patients and remote patient monitoring. Telehealth technology makes it easier for the healthcare team's members to communicate with one another, improving clinical outcomes. The employment of contemporary telehealth technologies will categorically improve the healthcare delivery system (23–24).

II. TELEHEALTH AND TELEMEDICINE

Telehealth: Telehealth refers to health information and services delivered by broadcasting and computer technologies. It describes long-distance care, advice, monitoring, and remote admittance between patients and doctors. A wide number of tasks fall under the umbrella of telehealth, including patient consultations via electronic media, remote management, e-health nursing care, and remote physical and psychological recovery. It gives us access to better health care options, improves emergency response, aids in fast diagnosis, is cost-effective, encourages clinical procedures, and eliminates the need for travel to the medical facility (25-26).

Telehealth encourages accessibility to excellent medical treatment. The patients will receive healthcare treatments that are more individualised. By using software for video requisition and video conferences, patients may also access improved medical facilities, and doctors can collaborate more effectively thanks to current electronic tools for data storage and management. Telehealth improves the effectiveness of therapeutic application, allowing doctors to spend less time in rural areas and providing better treatment for the ill. Telehealth also enables in-home healthcare professionals to work and will increase their patient interaction.

Patients won't have to stand in queue for extended periods of time, and doctors will be able to access patient information more easily and professionally thanks to computerised records that will also cut down on waiting times. Additionally, distance meetings allow doctors to treat more cases in a condensed amount of time by allocating less time to each person (26-28).

1. **Telecare:** We use the same definition of telecare as Barlow et al. used, which is “the use of communications technology to provide health and social care directly to the user (patient). This does not include professional-to-professional information sharing, usually for diagnosis or referral. Therefore, telecare is a tool used by experts to provide support to clients and should be used to provide a user-entered service that supplements existing models of care rather than replacing them.

2. **Telehealth:** Telehealth tools are used to proactively monitor patients and quickly react to signs of acute exacerbations in the management of long-term illnesses in the community. "Vital signs" monitoring, which uses equipment in patients' homes to spot patterns and issue alerts when certain thresholds are crossed, is thought to lower hospital admissions.

3. **Telemedicine: Healing at a Distance:** According to the WHO, telemedicine, often known as e-health, is "the practise of providing medical care through interactive audiovisual and data communications." This covers the provision of medical care, diagnosis, consultation, and treatment, as well as the dissemination of medical data and the provision of health education. Wilhelm Einthoven, the creator of the electrocardiogram (ECG), used telemedicine for the first time in history. In 1906, he conducted tests including telephone transmission of early ECG data. (29).

4. **Advantages of Telehealth:** The use of technology in the delivery of healthcare services provides a number of benefits, including affordability, comfort, and convenience. It also allows for the provision of care to those with mobility issues or those living in remote locations without access to a local doctor or clinic. These factors have contributed to the use of telehealth increasing dramatically during the past ten years. By lowering wait times and appointment requirements, telemedicine can assist improve the efficiency of the delivery of care. During the corona virus (COVID-19) epidemic, telehealth has become even more crucial. There is a heightened interest in and use of technology to deliver and receive healthcare as a result of worries about the virus spreading and being caught during in-person medical visits.

5. **Disadvantages to Telehealth:** While telehealth provides a practical and affordable option to see a doctor without leaving your house, there are a few drawbacks.

    - Not all types of visits can be performed remotely.
    - The security of personal health data communicated electronically is a worry. You must still visit the clinic for procedures like imaging tests and blood testing, as well as for diagnoses that call for a more hands-on approach.
    - •Even though insurance companies are paying more and more for telehealth visits in the COVID-19 epidemic, some services might not be fully covered, forcing patients to pay out of pocket.
    - Weak evidence, the effectiveness of telemedicine is only partially supported by research (30).

III. NEED OF TELEHEALTH IN TODAY’S WORLD

Hard-to-reach and remote areas exist in almost every country. In addition to this poor transport networks, poor healthcare infrastructure, and an inadequate number of trained

healthcare service providers are challenges for healthcare delivery to individuals in many parts of the world. Individuals with poor socioeconomic backgrounds are unable to bear the cost of transportation to the health facilities. Challenges in health care are due to variations in environment, economic capability, infrastructures, human resources, etc. The burdens of chronic non-communicable diseases are increasing day by day with improved life span. Travel to a health facility is difficult for a patient with immobility due to various medical conditions and there is a lack of trained healthcare providers in the nearby health facility in many areas of a country. Astronauts, ship passengers, air passengers, etc. often need telehealth services. Frequent visits are required for many chronic diseases which is not possible for the patients. Based on reports or parameters of these patients treatment can be modified using telehealth technology. In the case of infectious diseases, there is a risk of transmission of diseases to the treating physicians, nurses, and other service providers in the Hospital. There is also the risk of transmission to the other patients attending health facilities. Telehealth can provide faster, more efficient, and cheaper health care to patients. The service providers including professionals and students can have instant access to knowledge and skills for better management of cases using telehealth technology.

Telemedicine plays a vital role in improving access to treatment in geographic areas with poor healthcare infrastructure and inadequate trained manpower. Individuals are more comfortable with electronic communication and with raising dependence on investigation for diagnosis moreover not touching a patient for diagnosis is considered normal by most individuals (31). Physicians use telehealth technologies to deliver healthcare services. It is quite amazing how much telehealth technology contributes to patient health and happiness (32–34). Telehealth offers advantages for knowledge and skill development for better healthcare services to the individual, family, and community to students, professionals, healthcare management, patients, and carers. Accessibility, accountability, cost and quality, information interchange, and service utilisation for the health and well-being of individuals, families, and society can all be addressed via telehealth (35). Telemedicine has several benefits, but depending on the patient's health, it should only be used in conjunction with in-person appointments. (36).

IV. TELEHEALTH TOOLS AND TECHNOLOGY

The main goal of telehealth is development of high definition medium and technology to accelerate easy access to telemedicine delivery to provide medical speciality services while reducing costs along with training assistance to physicians and healthcare providers. These tools and technology are required to communicate among stakeholders that include patients, physicians, surgeons, healthcare service providers, research funding offices, researchers, professionals, industrialist, healthcare manager, and policy makers. During this process, important consideration has to be taken into account like marketing of tools, adoption of tools, and implementation of these tools and technology, communication between healthcare providers and recipient, training of professionals, cultural sensitivity of the localites, and end-user customization of these technologies.

The essential medium for telehealth necessary for clinicians at any health care facility is listed below.

1. **Online Patient Portals:** Online patient portals helps patient to access their personal illness and treatment history and reach out to providers 24 hrs and 7 days a week. These

portals eases patients for search for a doctor's clinics during office hours, or wait for a basic care plan question via telecommunication. These healthcare tools help patients to access:

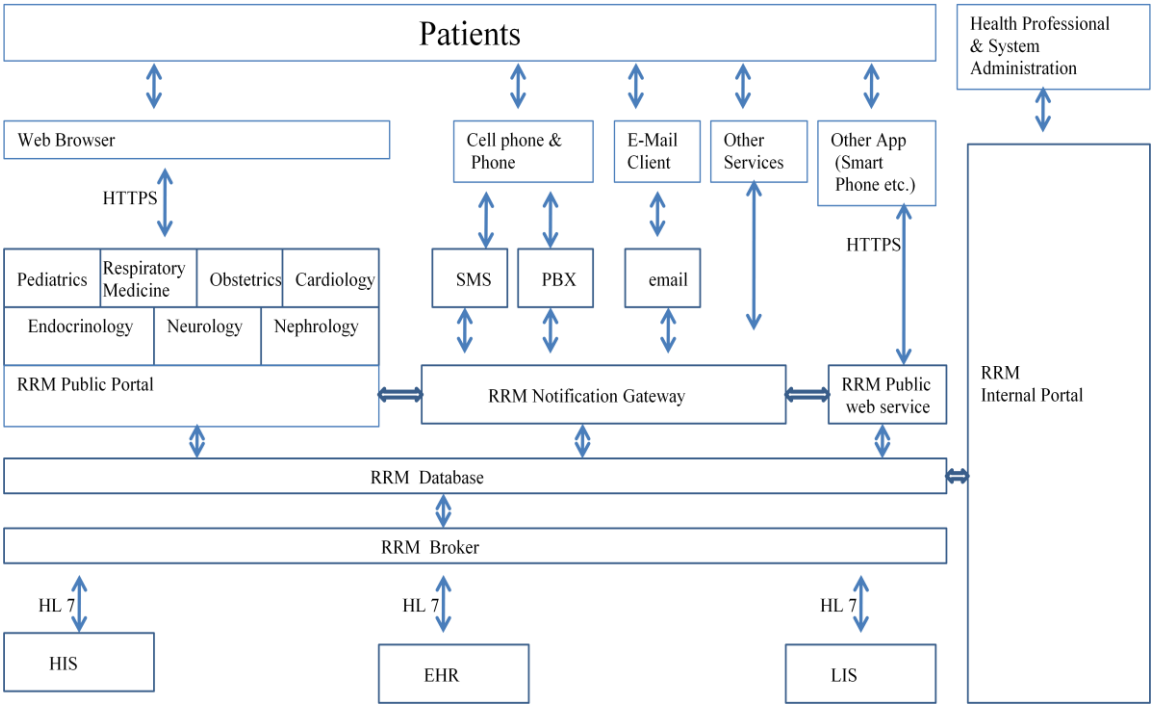
- specialist referral requests
- Plan appointments (if not an emergency)
- Prescriptions refill- to fill prescription in a pharmacy when supply of medicine is less.
- Direct access to laboratory tests data
- Go through their telemedicine history
- Take cross-reference to medical records
- Comprehend the Do's and Don'ts from educational libraries
- Helps to understand medical insurance and benefits
- Can update contact information if changed and renew and update medical insurance
- Pay bills of their healthcare providers online

Last and not the least, when it's time for a follow-up, vaccination, or prescription refill, busy and negligent patients are often reminded by automated reminder by online portals either via text or email or via online calls.(welkin health)

2. **Patient Doctor Relationship Management Platforms:** Patient Doctor Relationship Management platforms are intended to increase patient satisfaction. A Patient Management platform is of utmost importance along with improvement of healthcare delivery, if a clinician wants to maintain current patients and attract new ones. With applications like customer relationship management (CRM), and electronic health record (EHR) workflow has been eased patient data management and communication with lesser manpower.

Patient Relationship Management platforms allow healthcare provider bind their healthcare management together that includes telemedicine toolkit that allows the unit to excel with hassle free restoration of fragmented records. They provide a total up gradation of a patient's clinical history at one fingertip away for all the stakeholders. When health care workers including primary care clinicians, specialists and super-specialists, therapists, and mental healthcare providers are all on the same platform and can regularly check in with each other. Thus quality of care improves and patient doctor relationships build leading to increase in patient satisfaction and growth of the organization (37).

Figure 1: Customer Relationship Management (CRM) Solutions for Patient Care



N.B. HIS: Hospital information system; EHR: Electronic Health Records; LIS: Laboratory Information System

Figure 2: Patient Relationship Management (CRM) System flow chart

The above chart shows different modalities of web portals accessed by patients via web browsers- computer, mobiles, smart phones etc. where patients can access to specialist and super specialist via internal PRM where data base of specialist and administration are already present and they can book an appointment with the specialist of their choice and then treatment and further management can be provided by physicians through video conferencing. This information of patient, their appointment with specialist and treatment modalities are processed at PRM portal. Than PRM database are made and stored at Hospital information system, electronic health records and laboratory information system via a PRM broker (38).

3. **Webcams:** Physicians are to deliver a professional high-end online experience that mimicks a replica of a live clinic visit, with telemedicine becoming the new normal for working patient population, who cannot make out time during office hours and wait for long queue. We have to make sure the healthcare platform webcams should support high-definition video with a simple setup. Online webcams should be as simple as to plug in into any available USB port on a computer, desktop, or laptops that can support any operating system. For more comfortable interactions, ideally the camera should be mounted to a tripod. It should be designed to work with social media platforms like whatsapp, telegram, explurger, and Face Time for Mac etc.—whatever platform the patient finds comfortable. Before installation of a webcam we must ensure that it provides premium high definition video, user-friendly, and can be operated easily in any environment. Video conference infect is the most common means of telehealth services. Nowadays webcams with microphone, Smartphone with high end camera are also

available, laptops with webcams are also available making it easy for telehealth services to execute and reach common people.

4. **Microphone:** Quality microphones are other important tools for communication. Along with webcams, they make it possible to install collaborative systems in hospitals and doctor clinics to enhance more efficient telemedicine visits. We are to make sure these microphones should have a range of 30 feet approximately that enables clear voice capture of patients as well as all clinicians in the room. One can also invest in systems that extract voice input from ambient noise via telephones, speech recognition systems, or hearing aids. Surround sound produces a crisp, intimate listening experience. Other technology automatically steer a "listening beam" to the active talker, reducing background noise (welkin). Now a day's laptops and smart phones with high end microphone are also available that eases the telemedicine interaction.

5. **Internet Connection:** The most crucial part of any telehealth delivery needs a dedicated internet, 4G, 5G or fibre optic connection. The speed of the internet connectivity determines the audio-video quality and the extent of data transfer. Higher the speed of internet connectivity better will be the clarity of audio visual conferencing. Telehealth are the means toward individualized medicine, leading the telemedicine model to include smart phones and Internet-based equipments for remote areas, as well as health assistance with audio visual assessment, tele-remote bedside monitoring, and patient-specific care programs with event logs, patient electronic data, and clinicians prescription and advice writing capability. Telehealth in short is a series of applications, tools and programs clubbed together to execute patient care which is cost effective and patient friendly. Selection of the right applications ensures that both healthcare providers and patients are most benefitted (39).

V. ROLE OF TELEHEALTH IN HEALTHCARE

Access to healthcare providers is difficult in rural areas as compared to that in urban city. Moreover rural population is economically weaker to go faraway places and seek better treatment which sometimes leads to loss of property to meet the travelling cost itself. Poverty can priortize economy than health, so it becomes important to work than consultations at a healthcare facility and they ignore their ailments. A patient may restrict visit to a healthcare facility due to incredibly high medical bills due to lack of insurance. So telehealth may be the only solution until the health infrastructure reaches their doorstep and keep them away from quacks. Telehealth can bridge the remote medical infrastructure with online medical informatics and healthcare tutorials through telecommunications and audio visual aids.

If a health care provider has to come to a remote place he will have to bear travelling cost, staying cost and the visiting cost also likewise increases. On the other hand video conferencing is economical than in-person visits. Thus telehealth provides economical solution to patient care while addressing the social determinants of health.

1. **Benefits to Healthcare Provider:** While healthcare provider's preliminary target is to deliver superior health care, increase in administrative workflow may siphon some of their focus and energy away from their primary goal. Telemedicine technology increases workflow efficiency and work on improving their patients health.

- **Higher in Efficiency:** Telehealth technology drastically improves workflow and streamlines workload and data management. Automated message, patient databases and records of treatment and audio visual consultations helps healthcare providers to spend time productively and more patients could be accommodated and treated efficiently.
- **Lower Costs:** telehealth systems are cost effective to implement and virtual consultations are cheaper than health facility visits. Lesser healthcare provider reduces the overall cost of the health facility.
- **Easier Scalability:** As the practice grows, a health facility grows with quality care. Telehealth technology helps a clinician to automate clinical service like reminders of appointments via messaging and calls, office visit follow-up calls, billing, and prescription ordering and renew.
- **Increase in Revenue Collection:** Implementation of telehealth technology would increase one's practice's profits as time management will be easier leading to accommodation of more patients due to prior appointments and patient satisfaction.

Telemedicine drastically improves the way care teams provide patient-centric healthcare. Digital healthcare tool is an essence to overcome the scarcity of specialized healthcare provider in outskirt areas that would otherwise be a distant dream for the patient and seek quality care.

2. **Addiction and Telehealth:** The management for substance misuse requires frequent follow up and regular communication. They need regular motivation and should be on regular treatment. It offers people struggling to recover from addiction, more accessibility to their doctors or therapist. Easy access to the care team through audio-visual conferencing, as well as smartphone calls, texts, chats, and email will support patients recovering from substance abuse and, subsequently, increases positive outcomes. Regular support from the care teams helps patients to regain control over their lives, improvement in both physical and mental health and happiness leading to change in behavioral health.

3. **Diabetes:** Self management is one of the crucial part in management of Diabetes. Along with drugs a diabetic would require lifestyle modification and dietary control. Telehealth can help them lead healthy, normal lives. Online education of do's and do not's, regular reminder of follow up visits and motivational education to diabetics would help them manage diabetes and lead a normal joyous life . It also allows physicians to meet with patients online via real time telemedicine appointments, who are not able to come to the health facility as frequently as they need. It incredibly helps diabetic patients living in remote areas who must commute into larger cities in order to meet with endocrinologists and nutritionists.

Telehealth technology allow clinicians to take virtual care a step further by well-monitoring their patient's glucose levels. Insulin pumps and continuous glucose monitors apply digital technology to help patients with diabetes to easily track and adjust their blood glucose levels. Apps like Beato helps manage the blood glucose levels as they keep a track on the smartphone and reminds of regular monitoring of blood glucose level via messages and calls. It even provides care program and discounts on laboratory tests and medicines and offers consultation with diabetologists at a minimal subscription rate. Such apps and online portals helps them to absorb the medical information they require to

effectively self-manage their chronic ailments and live healthier and controlled lives with less chance of complications.

4. **Home health:** Care teams can interact with their patients at home and carry out online care through remote patient monitoring and virtual visits. It may require frequent check-ins and patient-provider dialogue to manage an accident or disease. Healthcare professionals can check in with patients between visits thanks to telehealth technologies. Implementing healthcare procedures that make use of these services can even lower the frequency of emergency room visits and readmissions to hospitals. According to a 2016 study, employing wireless peripherals to remotely monitor patients' vital signs decreased readmission rates for patients by 14% over three years and 5.2% over the course of 30 days. Technology doesn't replace home health in any way, but it does enhance it by making it easier to spot issues as they develop and assist patients when they need it.

5. **Telehealth Technology for Hospice:** For patients getting treatment at home in hospice care, telemedicine can be used. Healthcare professionals can monitor patients' biometrics remotely through remote patient monitoring (RPM).RPM will lessen the stress on patients and their families of travelling to an office visit, urgent care facility, or emergency department, in addition to increasing quick response and intervention as a patient's condition evolves. The patient, their family, and the healthcare professionals may all rest easy thanks to this virtual connection and remote patient monitoring.

6. **Telehealth Technology for Hypertension:** Patients with hypertension can lower their blood pressure by learning better control thanks to remote patient monitoring. Regular usage of home blood pressure telemonitoring (HBPT) may lead to a significant BP decrease, enhancing the user's freedom and quality of life.HBPT is a fantastic tool for patients who have a wide network of healthcare professionals working together to assist manage comorbidities and hypertension, including physicians, nurses, chemists, nutritionists, and acupuncturists. This strategy, when properly applied, even has the ability to prevent cardiovascular disease.

7. **Telehealth Technology for Musculoskeletal Disorders:** Real-time tele-rehabilitation services for musculoskeletal problems are "effective and comparable" to traditional practise, according to recent studies. Office visits can be made less expensive and time-consuming by substituting or enhancing them with video conferencing discussions. As a result, patients won't have to take time off from work or go farther than they are able or comfortable too.

8. **Telehealth Technology for Value-Based Care:** Care teams may deliver value-based care with the help of telehealth solutions. Patients can conveniently receive high-quality care without leaving their home or place of employment thanks to virtual visits, smartphone consultations, and other forms of real-time telemedicine. Telehealth makes your services more accessible, whether a team is treating patients with chronic conditions that make walking outside difficult or patients who live in remote locations and have long drives to the closest healthcare system office. Similar to RPM (remote patient monitoring), software programmes that incorporate telehealth technology make sure that vital patient-generated medical information and test results are accessible to every healthcare clinician who sees a patient. To ensure that every patient receives whole-person care, teams can simplify care between physicians and between practises.

More hospitals are looking into the advantages of telemedicine due to rising healthcare expenses and the demand for effective care. They seek greater communication between doctors and patients who live far away as well as better utilisation of medical facilities. Here, telemedicine also encourages improved connectivity, which has led to a decrease in hospital readmissions and a full adherence by patients to their prescribed care schedules. The greater contact benefit of telemedicine also applies to doctor-to-doctor communication. Telemedicine can help doctors create support networks where they can share knowledge and deliver better healthcare. Using video chat to give medical care is known as telemedicine. There are various benefits of telemedicine for both patients and medical professionals. Telemedicine can supplement and improve the general patient experience, despite some technical challenges and detractors (28, 32–34).

VI. LIMITATIONS OF TELEHEALTH

Overall, end-user adoption is challenged by the need to incorporate new technology into clinical practice workflow and daily activities. To use and rely on telehealth technologies, adoption requires cultural and behavioural changes. The lack of standard metrics for assessment for quality of service, hampers the evaluation and the progress of technology adoption and utility (40-41). The absence of technology integration, connectivity, and standardisation hinders the technology's usability and accessibility. For instance, telecommunication vendors and vendor resources might be able to provide low-cost solutions as data are transferred across their pervasive networks, but they might also limit expansion of applications and affordability for cell phone text and data transmission for financial reasons (42). From the providers' perspective, there is limited time available to respond to the multitude of telecommunications from patients and to enter the data into HER/EMR systems. A pervasive hindrance for these end-users to secure new tools and technology is the economic limitation for implementation, maintenance, and sustainability (39, 41-44). Telemedicine when compared to conventional treatment approach has lots of feasible drawbacks in its use and applications. It cannot be a substitute for the conventional healthcare system; rather it complements the healthcare system for minimal functions. There may arise serious issue like hacking patient's medical data, especially if the patient connects to telemedicine from a public network or an unencrypted channel. Telemedicine use can cause the medication to be delayed when a person requires emergency care, mainly because a doctor cannot deliver life-saving care or laboratory tests remotely. As the State rules differs from one state to another, and the physicians will be unable to practise medicine across state boundaries based on the state in which they are licensed and the state in which the patient resides. Clinicians must also ensure that the telemedicine service they use is safe and compliant with privacy laws.

Healthcare providers must focus on some points during telemedicine sessions, like; patient self-reports and necessitates physicians asking further questions to get a complete patient history. If a patient fails to report any important symptom that should have been detected during in-person care, medication and treatment given could be jeopardised. One of the most significant drawbacks is being lack of availability and affordability. Financially, it can be costly for the supplier to set up and manage. Therefore, telemedicine can be prohibitively expensive for smaller healthcare facilities, though it is a valuable and worthwhile service. Poor communication can also make it impossible to provide reliable care (28).

VII. ETHICAL IISUES IN TELEHEALTH

In telehealth, the information of the patient is available on various devices and computers, which increases the potential for security breaches. Patient is unaware of who will be responding and sharing their personal medical information's. There is involvement of various disciplines and problem may involve from these various disciplines – like Bioengineers, computer experts, software technicians, web programmers, insurance providers, physicians and nurses. The patients should be informed of the limitations and functionality of telemedicine services. Provision of obtaining informed consent should be available from the patient and there should be option to avail or refuse telemedicine visits opportunity by the patients, to ensure that the patients are not forced into unwanted modes of healthcare delivery (45, 46).

Telehealth, has raised issues like conflicts between various aspects of technology usage, security breaches, inaccurate and obsolete data, information overload; usability and user-friendliness; data standards and integration for linking patient and personal information to achieve interoperability for individual records, personal health management, and public health. The quality and accuracy of online information also is of deep concern. Patient autonomy should also be respected regardless of the mode of delivery (47- 49).

VIII. LOOKING FORWARD

Telehealth saw a rapid growth in its use during COVID-19 pandemic. Although there are limitations and drawbacks of telehealth, the proper development and implementation of telemedicine with various updated technical telehealth app and Smartphone will be helpful for the patients in respect to cost effective for selective conditions like follow up and non-emergency conditions, schedule appointments, access to medical records, physician directories, etc. Newer technology should ensure patients confidentiality.

In future, with the help of telehealth service, patient can schedule an appointment with the physician of their choice; upload medical history, verification documents, investigations reports and past prescriptions. The patient interfaces functioning properly allow the doctor to overview the Patient's physical & personal records and outline an urgent care plan. Local healthcare resources can be mobilized for emergency and non-emergent services. This further will allow the physicians to handle low level, non-emergent conditions to handle remotely and concentrate more on high-demand and complicated cases in person (28). Telehealth bridges the gap between a patient and provider, creating a new avenue to experience better. The future of telemedicine will depend on human factors, economics and technology.

IX. CONCLUSION

The telemedicine and telehealth has taken a rapid growth in its use, during the COVID-19 pandemic. Telemedicine is a valuable technology, where a patient from a remote area can take the benefit of medical care by the physician, in absence of a local doctor or clinics. Although it has limitations, like emergencies, surgeries and lab investigations and inability to do direct physical examinations, but telemedicine is beneficial to both the patients and the physicians in respect to economy, and health care services. It is also convenient with the application of telehealth technology tools, which includes information technology, online patient portals, videoconferencing, Smartphone apps, etc. Local healthcare resources can be

mobilized from emergent and non-emergent services. This will help the physicians to concentrate more on high-level and complicated cases physically in person and the non-emergent, minor conditions to handle via telemedicine remotely. Newer and updated telehealth tools and technology that utilize the internet and its robust computational resources have great promise in improving healthcare services for medically underserved populations, in relation to economics, and delivering medical services and education and training.

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