THE HEALTH AND TECHNOLOGIES IN TELEMEDICINE

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Abstract:

Due to travel expenses, routine hospital visits can be costly, especially in rural locations. People favor telemedicine in the Covid-19 Pandemic period because it makes face-to-face interaction less hazardous. Fortunately, using video conferencing or other virtual technology for telemedicine services can reduce the number of medical visits. Telemedicine, thus, reduces treatment costs and saves time for both the patient and the medical professional. Additionally, because of its quick and useful features, it helps simplify hospital and clinic workflows. Managing the recuperation of patients who have been released from the hospital will be simpler with the help of this innovative technology. Thus, it suffices to say that telemedicine has the potential to produce a win-win scenario. The purpose of this article is to examine the important features, capabilities, and treatment workflow obstacles to telemedicine's widespread use in the medical field. The study lists seventeen noteworthy uses of telemedicine in the medical field. A medical professional using telemedicine is said to be able to diagnose and treat patients from a distance. By increasing the likelihood of follow-up and decreasing appointment cancellations, using health apps for planned follow-up visits improves patient outcomes and increases the effectiveness of both doctors and patients. Patients should provide a complete medical history and use the high-quality audio-video system to show the doctor any noticeable bruises, rashes, or other symptoms that require care. Practitioners also require a payment gateway mechanism and file management. Patients and physicians can review the course of treatment together thanks to telemedicine technologies. But rather than taking the place of in-person consultations, modern technology serves to enhance them. In the modern era, this technology offers people a safe alternative to sitting at home or seeing the doctor, particularly in the event of a pandemic.

Keywords - telemedicine, pandemic, technology, virtual technology.

By combining cutting-edge technologies with top-notch network services, people can enhance healthcare delivery and increase its accessibility for an increasing number of people. A more advantageous technology that can help people receive Some clinics use online video conferencing to offer doctor appointments virtually. These appointments allow patients to continue receiving treatment from their regular physician when an in-person visit is neither necessary nor required. Another kind of interactive appointment is a visit via the internet with a physician or nurse practitioner. Several large corporations have automated doctor's offices available as part of their health care offerings. Conversely, nurses working at a nursing call center provide guidance for at-home treatment through a question-and-answer format. Preventive care and improve their long-term health is telemedicine. This is especially true for people who can't afford or can't get access to high-quality care. Telehealth holds promise for improving the availability, efficiency, and organization of health care. Although research in this field is still in its infancy, it is growing. For instance, tele monitoring vital signs and providing telephone-based care to individuals with heart disease has been shown to improve quality of life while lowering mortality and hospitalization risks. People should get a diagnosis or recovery plan for a number of good reasons. Patients may feel more confident that they are getting the best care possible as a result. For the treatment of mental health conditions,

telemedicine is a great option. It gets rid of some of the things that keep patients from getting this important kind of care. (1,2,3) With telemedicine, patients can get care when it's convenient for them and their doctor, all while staying safe. This could suggest that scheduling childcare or taking time off from work are unnecessary. Sitting close to other people when at the doctor's office can lead to infection. Individuals with weakened immune systems or chronic medical conditions should be particularly cautious about this. It eliminates the chance of catching an infection at the hospital where the doctor works. Providers of telemedicine services might charge less for overhead. By enabling them to treat more patients, telemedicine may enable clinicians to supplement their income. Caregivers are shielded from potential infections when they view patients on the internet. If the patient does not have to travel to the doctor's office, wait for treatment, or contract an infection while in the hospital, they might be satisfied with their doctor. (4,5)

Healthcare professionals can now treat a greater number of patients virtually thanks to telemedicine. Furthermore, it will last for a very long time now that it has shown its value. While many providers were introduced to telehealth through basic video conferencing, the upcoming wave of telemedicine technologies would offer much more. For instance, doctors can use natural language processing to automatically take notes during patient visits. In an emergency, experts will provide input from a distance. Healthcare providers can submit the data collected by medical devices to an Internet of Things (Iota) cloud platform to be combined there. The Internet of Things (Iota) systems that healthcare providers use to manage patients will then receive this data. Artificial Intelligence (AI) is one of the newest telemedicine technologies that can help doctors work more efficiently. The use of telemedicine technology by patients in remote locations has enormous potential. (6,7,8)

WHAT IS TELEMEDICINE?

A health-related service provided through electronic information and communication technologies is known as telemedicine. It describes the entire set of deliverables intended to empower patients and their doctors or other healthcare professionals. Numerous applications can be made of it, such as remote control, telehealth nursing, online patient consultations, and remote psychiatric and physical rehabilitation. It makes it possible to make better decisions about health care, improves the effectiveness and quality of emergency services, speeds up the diagnosis process, and lowers costs for both patients and physicians by streamlining clinical processes and cutting down on hospital transportation. (9,10) More people now have access to first-rate medical facilities thanks to telemedicine. Now, patients will receive more individualized clinical care. Additionally, they can meet the best medical providers with the help of video application software, have remote consultations, and have access to better tools for networking, data storage, report management, and utilizing the specialized skills of one another among clinicians. By enabling doctors to spend less time on rural assignments and more time caring for patients, this enhances the standard of medical practice. Additionally, telemedicine will improve patient outcomes and allow private healthcare professionals to continue practicing. With electronic files, doctors will be able to access patient information more quickly and easily, saving wait times overall and removing the need for patients to stand in lengthy lines. In addition, doctors can treat a greater number of patients with remote appointments because they can spend less time with each patient. (11,12)

WHY HEALTHCARE SYSTEM NEEDS TELEMEDICINE

An increasing number of hospitals are looking into the advantages of telemedicine due to rising healthcare expenses and the demand for better care. They desire greater utilization of healthcare facilities and enhanced communication between doctors and patients who live ase in hospital readmissions and complete adherence by patients to their prescribed treatment regimens. The improved contact benefit of telemedicine also applies to doctor-to-doctor correspondence. Physicians can create support networks through telemedicine in order to share knowledge and deliver better medical treatment. Telemedicine refers to the practice of providing medical care via the internet, typically via video chat. There are many benefits to this technology for both patients and healthcare professionals**.** Even with its current set of challenges and detractors, telemedicine can support and improve the patient experience in general. (13,14,15)

CAPABILITIES AND FEATURES OF TELEMEDICINE WHEN USED IN HEALTHCARE MANAGEMENT SYSTEM

These days, the idea of telemedicine and related services is well-established and shown to benefit society. The different advantages and amenities that the telemedicine concept, specifically for the healthcare area, offers are reflected in Fig. 1. This approach is eventually made possible by the chronic health management, prescription compliance, remote services, care-for-all in critical and severe instances, etc. that it offers. Furthermore, a range of tele-wearables provides patients with healing and unique updates on their health status. (16,17)

Many refer to telemedicine as disruptive innovation because it is an innovative technology. Therefore, telemedicine uses a variety of electronic communications media, such as teleconferencing, image-sharing, and remote patient surveillance, to provide care for a patient who is far away. In order to provide their patients with high-quality care, doctors might also employ automation. They must create more effective IT support systems and pick up new file management techniques. For instance, a virtual consultation allows primary care doctors to consult specialists when they have questions regarding a patient's condition or course of therapy. Exam results, medical histories, X-rays, and other photos are transmitted to the expert for review by the physician. The expert can respond electronically and schedule a video conference with the physician. These consultations via the internet can cut down on wait periods for expert feedback, do away with the need for pointless in-person referrals to specialists, and do away with the need for pointless travel. When a physician can visit a patient, diagnose a condition, and record the encounter, telemedicine techniques are more beneficial. (18,19,20,21)

THE TREATMENT WORK FLOW PROCESS AS BEING USED IN TELEMEDICINE CARE

The process for attempting telemedicine culture-based treatment in healthcare services is depicted in Fig. 2 as a line-way diagram. It offers a cutting-edge facilities and care throughout the entire implementation process. Everything begins with the patient's entry or comprehensive

data, and the telehealth supportive care unit comes next. This stage also pertains to assigning a doctoral assistant to the patient, and after the diagnosis, providing the patient with the best care possible (22,23)

Through communication, telemedicine and other technologies enhance clinical and administrative processes. It is a versatile method that offers emergency care in situations that are essential as well as non-critical. Generally speaking, people with chronic illnesses are treated with it. However, a hospital can make up for telemedicine if it has the right ambulance crew or other staff. Moreover, the telemedicine system can be expanded to include other features like e-prescriptions, treatment dynamics graphs, and the patient's past medical history.

Moreover, it is effortless for physicians to contact patients for updates or conclusions after a consultation. Text messages are so crucial since they allow the doctor to communicate with patients fast and directly without needing to schedule another visit. Additionally, doctors can share information and prescriptions between offices. (24,25,26)

Healthcare practitioners benefit greatly from telemedicine. To provide more efficient care, healthcare organizations use telemedicine in skilled nursing facilities and doctor's offices. AI diagnostics, medical streaming apps, electronic medical records, and other technologies can work in tandem with telemedicine software to improve patient care and diagnosis for doctors. This allows doctors to adjust treatment programs and monitor patients in real time. Physicians can serve more patients with telemedicine without increasing staffing levels or enlarging office spaces. But a number of medical professionals and patients—mostly senior citizens—are finding it challenging to get used to telemedicine. (27,28)

BARRIERS FOR THE ADOPTION OF TELEMEDICINE PRACTICES IN MAKING HEALTHCARE SERVICES EFFECTIVE

The various barriers to the effective use of telemedicine treatment to assist the medical units and patients in receiving the best care possible are illustrated in Fig. 3. While attempting to implement telehealth-related practices for Healthcare and its related areas, there are certain common and customary obstacles that must be addressed. Everything has to be completely free of any kind of breach of privacy, disclosure of sensitive information, fraud and abuse, erroneous answers, etc., as any of these problems could depress someone or make the case more complicated in terms of health implications. (29,30,31)

By providing access to doctors and specialists, fostering stronger relationships between patients and their caretakers, and motivating both parties to leave dangerous situations, telemedicine ushers in a new era of technology-assisted healthcare. Various telemedicine techniques can be used to treat drug-abusing patients. There are financial savings because therapy is generally less expensive. As technology develops, the cost savings will become increasingly noticeable. Telemedicine is great for doctors and patients when it comes to diagnosis and care. It can function as a very good support network. Healthcare providers can use this type of telemedicine technology to ensure patients receive the right medicines and care. Compared to traditional care, telemedicine can be more cost-effective for the patient as well as the practitioner. (32,33)

TELEMEDICINE IN HEALTHCARE: SIGNIFICANT APPLICATION AREAS

With the use of telemedicine technology, patients can receive a wide range of medical services, such as physical therapy, psychotherapy, and primary care consultations. It uses wireless technology, including computers and smartphones, to deliver treatment. In telemedicine, video conferencing is typically utilized. Conversely, certain providers opt to offer treatment via phone calls or emails. Patients frequently work with their primary care physician in conjunction with telemedicine. When a patient is unable to visit a healthcare facility or needs maintain a physical distance, this technology can be useful. It enables practitioners to charge for weekend or extended hours without having to pay for office space. Additionally, this increases the practices' appeal to the increasing number of patients who need telemedicine as their primary care provider. It is an easy and affordable way to help patients with serious illnesses take control of their condition, participate in their care, and stop complications from getting worse. (34,35,36)

LIMITATIONS OF TELEMEDICINE IN HEALTHCARE

When compared to traditional medical methods, telemedicine offers a number of potential disadvantages. It supports the traditional healthcare system for its most basic purposes but does not replace it. Patient medical data hacking is a significant problem, particularly when a patient connects to telemedicine over an unencrypted route or a public network. This technology can delay the administration of medication when a patient needs emergency care, mostly because a doctor cannot do laboratory testing or provide life-saving care from a distance. Different states have different laws, therefore depending on which state they are licensed in and which state the patient resides in, doctors cannot practice medicine across state lines. Additionally, clinicians need to make sure that the telemedicine service they employ complies with privacy laws and is both serious and safe.

CONCLUSION

In order to guarantee that patients, make long-term lifestyle changes, telemedicine is an invaluable tool for connecting doctors with patients. For employees at medical offices, it offers several advantages. By doing this, the hassle of patient check-in is frequently removed, freeing up time for higher-value work. Clinicians can treat patients and possibly help other afflicted practices at the same time when they have the option to visit patients online. By using electronic means to communicate with the patient regarding diagnosis, treatment, and illness prevention, this also lessens the impact of distance. The most comprehensive telemedicine application can

bring health care closer to those who reside in remote places, where it would otherwise be impossible to obtain access to high-quality care. The ability of this technology to provide information sharing across vast distances has been demonstrated in recent years to improve the quality of healthcare facilities. It increases accessibility to underprivileged communities and facilitates appointment scheduling and attendance. Individuals with limited mobility receive the necessary medications and medical advice from doctors faster. The medications, examinations, and processes they have to oversee at their location. Telemedicine transforms each sick person's life and ensures that they receive the right medical care by reducing the amount of time that doctors and patients must travel across the globe.

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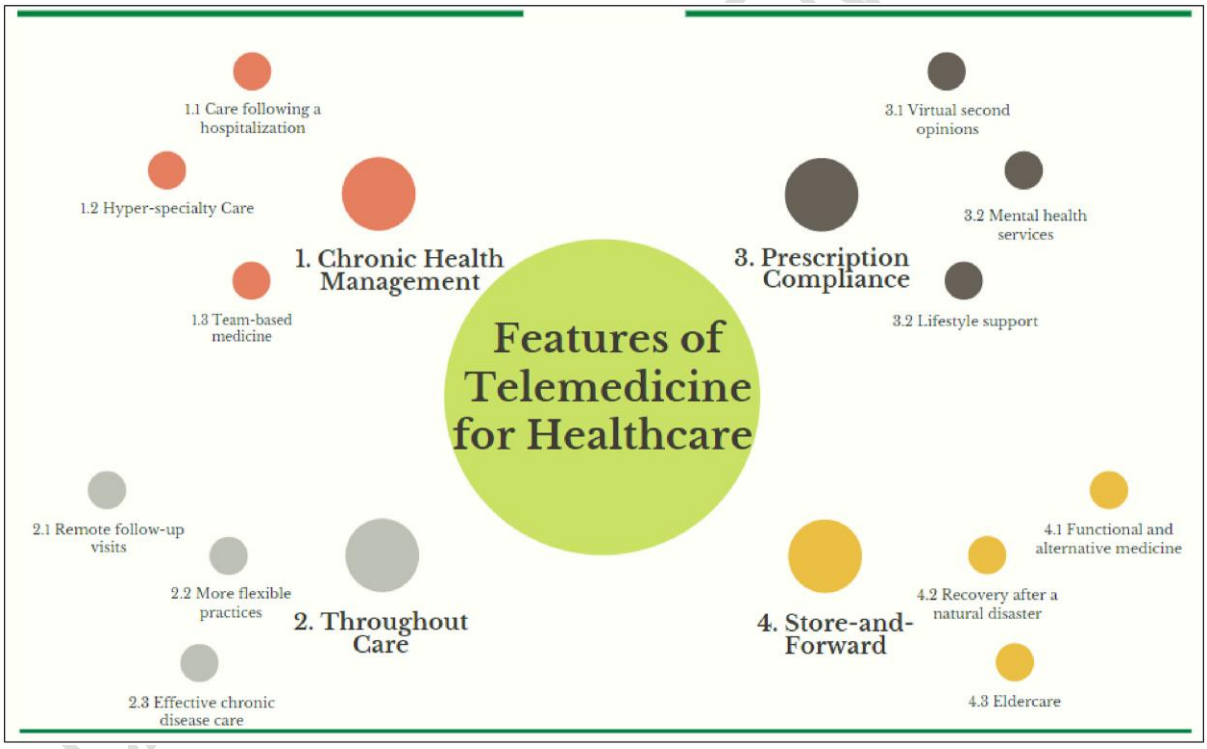

Fig.1 : various telemedicine features & capabilities for the healthcare industry.

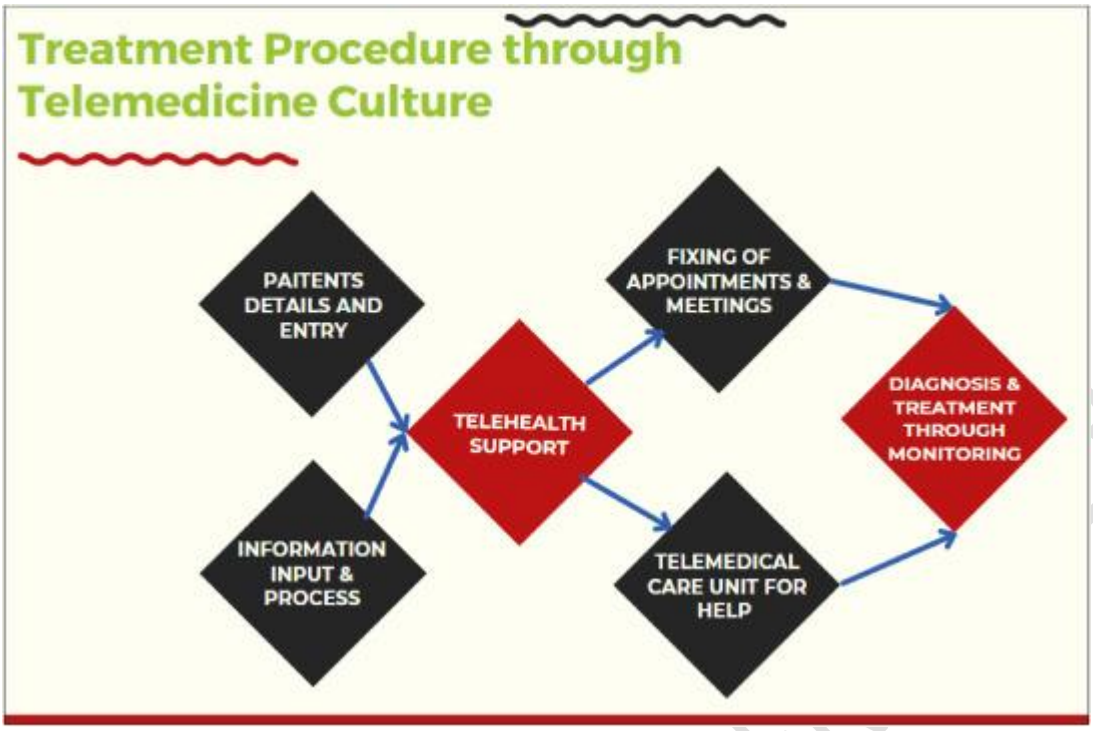

Fig.2 : Process of work flow therapy using telemedicine assistance.

Fig.3 : frequent obstacles to telemedicine help for healthcare.