



Telehealth: Adapting Information and Communication Technology to Empower Patients

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ABSTRACT

Health and technology have become top priority areas in the design of a country's budget. The sedentary life style of people will surely be a hurdle to good physical and mental health. The increasing demand to provide better health care facilities to a country's population will call for appropriate supply of medical services at the right time to meet these demands. But owing to the shortage of hospitals, doctors, nurses etc. it will worsen the aim to deliver quality care to the patients without any unwanted delays. Also, the doctor to patient ratio and the patient to bed ratio is not up to the mark in many developing countries and as a result, hospitals and home care agencies will struggle to provide health care to the ever increasing number of patients. The aim to deliver quality care to the patients without any unwanted delays has paved the way for the growth of Telehealth services to care for the ever increasing number of patients who will need care at home in the coming years. This article aims to highlight the amount of support and assistance that will be received when Telehealth is utilized to improve patient care.

Keywords: Telehealth, technology, patients and health care.

INTRODUCTION

Health care is an industry which had to undergo continuous excellence to attain customer satisfaction. Health care needs have changed gradually from the primitive ages to this modern era. We have to keep in mind that every country has its own resources and limitations. The main aspect is to channelize these resources to achieve the desired targets. The hunger to improve the health care needs and services would have driven a country to modernize its health care. Again the disparity between and rural and urban population has been a challenging

task in many developing countries. Some of the key areas where development is often required are infrastructure, transport and communication. There has been a gradual integration of Information and Communication Technology with health care. The decks have been cleared for a lot of R&D in this field. This has slowly paved the way for the birth of Telehealth in the field of health care which is still in the nascent stage but we can say its gaining momentum. The WHO has been endlessly trying to achieve its target - "Health for All". Across continents and across poles

various programs have been designed, initiated, implemented, monitored and evaluated to provide better health care to the people. Another problem seen in some developed countries especially in the United States is the aging population (Debarros, et al., 2005). This will shift the health care delivery system from hospitals to homes. As the need for healthcare at home increase, this will in turn call for a proportional increase in the number of nurses. Telehealth will help clinicians to obtain the physiological data they need to take care of the patients. Telehealth will also enable patients to easily come in contact with their physicians making self-care and better patient compliance feasible. This will also save added costs, increase nursing staff efficiency, create more referrals and decrease the number of readmissions and emergency room(ER) visits.

Telemedicine and Telehealth

Telemedicine is the use of Information and Communication Technology (ICT) to provide health care services at a distance. A closely associated term is Telehealth, which encompasses a broader definition of remote health care that includes nonclinical services, such as patient education, disease self-management, and medical training for providers (Fordeucey, et al., 2012). Telemedicine and Telehealth involve the utilization of ICT to provide a wide array of health services to individuals without requiring the individual to interact face-to-face with the health care provider delivering the care. (Sacramento, CA: California Telemedicine and eHealth Center, 2006). Common applications of telemedicine and telehealth include videoconferencing between a patient and health care provider for a consultation or among groups of patients or providers for education, support, and care coordination; transmission of data, such as x-rays, photographs, video, and audio files; remote monitoring of vital signs and other health

indicators; and Internet applications for patient education and disease management. An example of a typical application of telemedicine involves a patient at a health care facility in a rural or medically underserved area, where the type of provider the patient needs is not available. Such a facility is commonly known as a spoke site (Sacramento, CA: California Telemedicine and eHealth Center, 2006). The spoke site, using ICT, links to what is known as a hub site - where the consultative services are provided (Oakland, CA: California HealthCare Foundation, 2007).

Technologies Used in Telemedicine

While telemedicine relies on a number of technologies, telecommunications technology is necessary to enable communication between two or more sites. Although Plain Old Telephone Service (POTS) and Integrated Service Digital Network (ISDN) are sufficient for many telemedicine interactions (Digital Opportunity for Youth Issue Brief, March 2008), they are limited in their ability to support more complex telemedicine applications, such as videoconferencing between more than two sites and transferring medical images at the level of quality needed for accurate diagnoses. Such applications rely on a high speed Internet connection, or broadband. Broadband refers to a high-speed, always-on connection to the Internet, which enables information to be transferred with very little delay in receiving or sending (Fordeucey, et al., 2012). For optimal telemedicine performance, the broadband connection must be of sufficient bandwidth to enable all connection points to send and receive large amounts and complex sets of data quickly and accurately. Security measures must also be in place to ensure that data are transferred only to the intended recipients, protecting patients' privacy. Telemedicine also involves the use of an ever-growing menu of software and technological devices, including

videoconferencing equipment; digital cameras; electronic clinical devices, such as digital stethoscopes; and disease management and health education software.

Researchers have explored the use of telehealth technologies to provide follow-up self-care management and booster interventions (Karen, et al., 2003) and have demonstrated that home-based telehealth technologies can be used to optimize coping and community integration skills for adults with severe functional disabilities (Research – Cost Analysis, Kansas University Medical Center, Center for Telemedicine and Telehealth, 2007).

Telemedicine Matters for Children

Low-income children living in medically underserved areas, including rural and parts of urban areas, face geographic and economic barriers to accessing health care. Telemedicine is a tool to help them obtain care they would otherwise face great difficulty accessing. Extensive travel to access health care can be particularly burdensome for low-income families. Aside from the inconvenience, many low-income families do not have affordable transportation options (Sacramento, CA: California Telemedicine and eHealth Center, 2006).

Children with Special Health Care Needs

Children with special health care needs, such as autism, genetic diseases, mental retardation, depression, anxiety, and behavioral problems, often require multiple and coordinated health and related services on an ongoing basis from a multidisciplinary set of providers (Glueckauf, et al., 2006) Telemedicine can be especially valuable for children with special health care needs (Karen Albus, et al., 2003) who live in rural or medically underserved areas because of the lack of pediatric subspecialists in these areas (Sacramento, CA: California Telemedicine and eHealth Center, 2006).

Home Health Care

Telehealth technology has helped improve the lives of families of chronically ill children by allowing them to keep their children at home. Remote monitoring devices can alert parents and providers when a health indicator, such as heart rate, shows a significant change. Videoconferencing can allow providers to see their patients without the patients having to travel. This is especially beneficial for chronically ill children who may need multiple interactions with their providers (Dorstyn, et al., 2011)

Need for usage of Telemedicine

- Globalization has made it possible for remote healthcare services and technology to become a commonplace for healthcare.
- Telemedicine enables practitioners to evaluate, diagnose and treat patients remotely using the latest telecommunications technology. In many situations, telemedicine offers numerous benefits as an alternative to traditional in-person medical care.
- Many patients find it difficult to travel to clinics, hospitals, or doctors' offices for a number of reasons. Telemedicine can be a great option for patients with unique challenges or in situations making it difficult to travel to receive traditional care.
- The use of telehealth technologies results in many positive outcomes including fewer hospital re-admissions, more faithful following of prescribed courses of treatment and faster recovery.
- Remote medical technology is an increasingly popular way to administer preventive medicine and manage chronic conditions.
- By using video conferencing and other telemedicine technology when applicable, healthcare practitioners

and patients can reduce the costs associated with regular office visits

- Telemedicine can be used to monitor discharged patients and track patient recovery, facilitating communication between doctors and patients
- Telemedicine allows hospitals to create networks to provide each other with support. By easily sharing their expertise outside their own institutions, doctors can offer incredible value to their medical colleagues and those colleagues' patients
- Telemedicine has also been used in extreme conditions like war zones as medical aid cannot be arranged immediately.

(Source: GlobalMed, 2010)

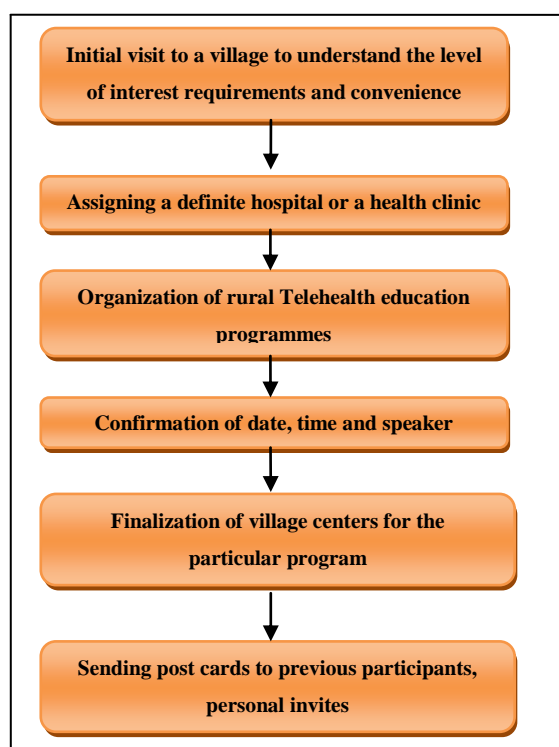


Figure 1: Rural Telehealth

How can Telehealth reach out to a rural population?

It needs to be brought to light that the rural health facilities face myriad of challenges not just in securing an

appropriate number of healthcare workers but also the patient behavior in rural areas. In addition to these there is always a shortage of nurses worldwide and also the turnover rate among health care workers is high. The physicians working in rural healthcare facilities or centers do not have the assistance and support that their urban counterparts are having. We often see that in urban areas hospital physicians are placed on reasonable rotations for on-call work whereas in rural areas a doctor may be on call every weekend, every other day and sometimes at all times. To add to these problems there is a greater challenge of health insurance. The cost of treatment in the urban areas often sets a perceived burden in the minds of the patients. This increases the work overload on doctors in rural areas. It is very difficult for an area to recruit any sort of industry without sufficient healthcare services. This vacuum can be filled and compensated with technology. Telehealth and Telemedicine can prove to be of immense use and support in these situations and which can keep health care and other industries going even in the darkest of circumstances. One significant step being taken is the development of online training programs for healthcare workers and nurses, which will make up for the shortage of skilled manpower in these areas. Also, telemedicine technologies can be used to enable patients to come in contact with physicians anywhere across the country. This could be an important breakthrough for improving care in remote areas where in-person treatment is not always readily available. In case of remote places and rural areas one has to personally visit a village to understand the level of interest, requirements and convenience for launching Telehealth. The following steps may be followed in order to make the launch more effective and participative.

Broad Dimensions of Telehealth

With the use of Telehealth, nurses can now check many symptoms and conditions, such as blood pressure, heart rate, blood sugar, and weight of their patients regularly from a distant place or her place of work. They can also monitor the patients during the course of treatment and can even have a face-to-face teleconference from her place of work. This will also empower the patients as they can check their pulse and heart rate and if there is variation they can look for reasons or circumstances that caused the change. Since technology is continuously improving we can easily find innovative products for Telehealth provided by a number of vendors. In the past internet connections were very expensive but nowadays patients can use their regular phone lines for Telehealth (Digital Opportunity for Youth Issue Brief, March 2008). It can also be of great help and assistance when there is shortage of nurses or other health care workers. They can manage or attend to more patients during the

same period of time as a result their efficiency will be increased. This technology can create new avenues to provide health care to assisted living facilities, prisons and schools where Telehealth facilities can be set up and used by numerous patients. Thus, this multi-faceted approach will help health care to a great extent.

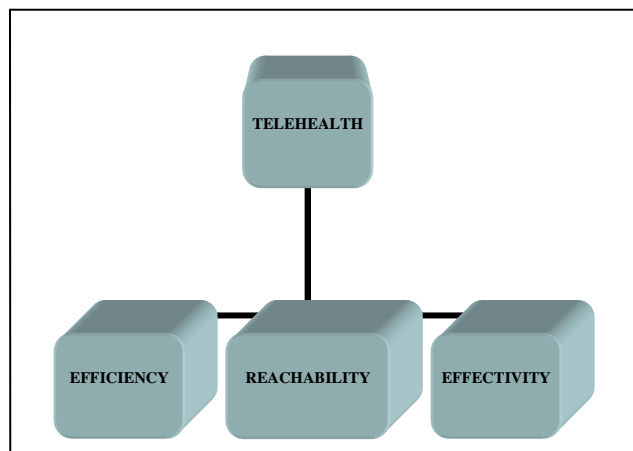


Figure 2: Broad dimensions of Telehealth Barriers of Telehealth

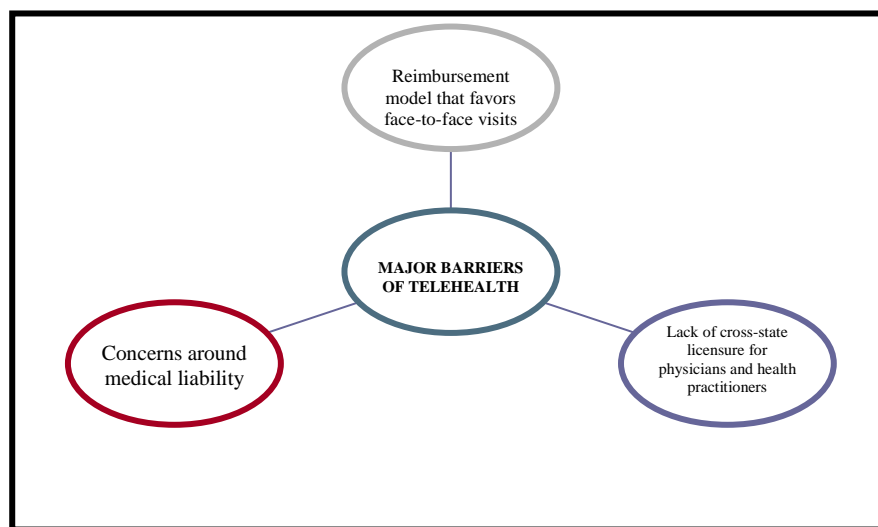


Figure 3: Barriers of Telehealth

CONCLUSION

We can conclude that Telehealth has opened up new avenues for health care in today's world. We can identify the roles that can be played by Telehealth in improving

the quality of life of patients. With changes in health care delivery and reduced hospital lengths of stay, family caregivers are serving increasingly as health care extenders in the healthcare industry. This will be an

opportunity for researchers to come up with rural telehealth strategies to provide specialized health care to these areas. It has also increased accessibility in rural areas as well as helped the health care professionals to reach out to a greater number of patients. But there is undoubtedly a gap between the health care providers and health care services in the rural and urban areas. This is the gap which Telehealth attempts to bridge in order to benefit the entire health care system. Empowerment of patients with the latest technology in Telehealth will be an important milestone in the field of health care. It will help researchers to overcome the barriers in Telehealth considering demography, epidemiology, and health status, access to health care and its costs and coverage. We may come across certain issues regarding adherence and attendance to these Telehealth sessions as well as issues relating to net connectivity at different areas but all these are manageable to a great extent. It will also be a way to save transportation costs of the patients. Future research is needed to test the various economic benefits of home-based telehealth intervention over other forms of health delivery.

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