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E-HEALTH AND ITS IMPLICATIONS

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Abstract*:* e-health is the use of information and communication technologies (ICT) for health and is the intersection of biology and technology. Health services and information is delivered or enhanced through the Internet and related technologies. e-health technologies will play an increasingly important role in the coming years, as more and more older people will require medical care and support. Due to the prevalent demographic changes and the continuously decreasing number of nursing staff and caregivers, there is an increased need for intelligent medical technologies, which enable people to live independently at home. Some prominent examples of e-Health are Telemedicine, Robot-Assisted Surgery, Self-Monitoring Health care devices, Electronic Health Records, mobile health, Big Data in healthcare, Targeted advertising, e-Pharmacies and e-Learning in the healthcare sector. e-Health enables the narrowly focused system of curing diseases in hospitals by health professionals to a system of providing information to citizens to take care of their health whenever the need arises, and wherever they may be present.
Government of India through state governments has implemented several e-health programs to connect the peripheral hospitals with main district hospitals and teaching hospitals. The subcomponent of initiative may include the laboratory services, radiology services and tele-consultation. This initiative may bridge the gap of healthcare delivery across the states. This paper presents the challenges and opportunities in ICT implementation in health care specific to Indian scenario.

Key words: Telemedicine, Electronic Health Records, e-pharmacies, e-health programs, laboratory services.

INTRODUCTION

e-Health is the use of information and communication technologies (ICT) for health services like treating patients, educating the health staff, tracking diseases and monitoring public health in the pursuit of providing a better and healthy society. e-Health apart from providing health care services also brings awareness among the people regarding the outbreak of epidemics, preventive measures and its treatment. Ministry of Health under Digital India has undertaken various initiatives using Information and Communication Technologies for improving the efficiency and effectiveness of the healthcare system. ICTs play an important role in making the population aware of the different diseases and the preventive measures that should be adopted. Despite some attractive features of e-health systems there is a limited support and acceptance of this technology by the healthcare professionals. Implementation of ICTs in healthcare services requires that the healthcare providers should have full level of organizational support and motivation to adopt to the changes in the healthcare practices so as to deliver service to the patient's satisfaction. Though e-health provides health services, there are numerous challenges to be faced which includes high cost of operation that has to be brought down to the affordable cost. To bring awareness among the stake holders and the doctors for the adoption of e- Health technology, innovation of reliable, cost effective and easy to use informatics is required to manage the patient's information.

The e-Health care system begins right from the online appointment scheduling, e-Prescription that electronically processes and generates prescription improving accuracy, medication & vaccination alerts that take care of the important medical tests and vaccination dates & sends automated reminders via SMS or email. An integrated pharmacy module, and integrated lab module which simplifies ordering and receiving lab results for more streamlined clinical workflow and an e- Referral that allows requesting electronic consultation & transfer of information for specialist opinion on patients [1,2].

Information and communication technologies can provide accessible, cost-effective and high-quality in healthcare services. Telemedicine uses ICTs to overcome geographical barriers and increase access to health care services. Telemedicine is defined as, "The provision of healthcare services by the healthcare professionals using information and communication technologies where distance becomes a critical factor. Telemedicine has a synergy of Information Technology with Medical Science to provide health services to people in the rural and remote areas [3]. Using the services of Telemedicine requires two points, the first one a Consulting Centre where the patient and the equipment for communicating the patient's medical information is available. The second point is the Telemedicine Specialty

Centre, where the Clinician is present and can interact with the patient even from a remote site to view his reports and monitor his progress. Telemedicine can involve a simple telephonic conversation to a complex process of transmission of electronic medical records of clinical information and diagnostic tests [4]. Telemedicine programs in India are actively supported by organizations like, Department of Information Technology (DIT), Indian Space Research Organization, and NEC Telemedicine program for North-Eastern states, Apollo Hospitals, Asia Heart Foundation, State governments and also some private organizations.

Some specific trends in e-health, include genomic medicine, electronic health records, remote healthcare and diagnostics, and aggregated public health data. Genomic medicine, the use of personal genetic markers in DNA to assist in disease prevention, diagnosis, and treatment decisions is also progressing under e-Health. Telecommunication networks and information technology has been used for progress in healthcare services like remote clinical care, diagnostics, and electronic patient monitoring [5]. This progress is possible due to the wireless capability, and by the relative affordability of devices. e-Health service is advanced by the introduction of remote diagnostic processing capabilities that acquire medical information through diagnostic technologies such as Magnetic Resonance Imaging (MRI) or ultrasound and is transmitting this information to the healthcare provider located in a remote area. Tele surgery or remote surgery or robotic surgery is another milestone in the field of e-health. It combines the elements of robotics and communication technology where the patient need not travel long distances for treatment. With the changing demographics, technology and changing health care scenario it is not far that the health service providers will shift to e-health.

An electronic health record, or electronic medical record, is the systematized collection of health information stored in a digital format. e-Health records may include a range of data, including demographics, medical history, medication and allergies, immunization status, laboratory test results, radiology images, vital signs, personal statistics like age and weight, and billing information [6].

e-Health record is still a central focus of national e-health policies, and strategies within the health systems since it raises concerns about data security and privacy. Electronic patient monitoring systems have great potential to improve patient care for those in rural and remote regions. These systems, such as blood glucose monitors, blood pressure devices or heart monitors, enable medical providers to electronically observe a patient remotely using these devices and telecommunication networks. These are cost effective and patient-friendly ways to monitor elderly patients and those with chronic medical conditions or those who are in the recovering state. e-Health records improve the accuracy and clarity of medical records by reducing the duplication of tests, delay in treatment and keeping the patient well informed to take better decisions. Through e-Health records it can be made mandatory to the doctors to prescribe the generic names of the medicines rather than their trade names thus making the treatment cheaper and thus putting a check on the production of such medicines in the market. The challenges involved in maintenance of e-Health records include availability of technology and trained technical personnel, affordability and lack of suitable health policies by the government. Electronic Health Records helps in gathering clinical data from many patients simultaneously in a very short period of time. There is always a risk of losing this data and relying totally on computers is dangerous. Hence a balance between the dependency on computer and the human intelligence must be done smartly.

As a part of e-Healthcare, digital networks can be used to perform virtual diagnosis of diseases. X-rays or scanned images of patients can be shared with other health providers or can be stored in the e-Health card of the patient. These e-Health cards maintain the personal data, medical history, related diagnostic reports and other health information of the patient that is readily accessible during emergency. Tele surgery or remote surgery or robotic surgery is another milestone in the field of e-health. It combines the elements of robotics and communication technology where the patient need not travel long distances for treatment [7].

With an increasing trend of buying medicines online and lack of proper regulatory check, the number of e-pharmacies has increased. An increase in patients with long term illnesses and increased chronic diseases are the other factors that contributed to the increase in e-pharmacies. Due to the advancement of technology, access of drugs through Internet has become very easy for a common man. There is lack of proper and clear laws for e-pharmacies. The laws governing Pharmacies in India are derived from Drugs and Cosmetics Act, 1940; Drugs and Cosmetics Rules, 1945; Pharmacy Act, 1948; Indian Medical Act, 1956 and Code of Ethics Regulations, 2002 etc. Regulatory authorities find it difficult to control, monitor and track the sale of drugs through internet as there is lack of clear guidelines. Therefore, e-pharmacies may prove to be a dangerous trend in future if not regulated properly. Some pharmacies only dispense drugs with a valid prescription, some provide online consultations for prescribing and dispensing medicines, and some dispense medications without a prescription. Self-diagnosis and self-medication are the two dangers that can occur due to the e-pharmacies. A consumer can purchase prescription drugs without ever speaking to a pharmacist or physician and may not visit a physician for a long time under conditions of non emergency. A drawback of e- pharmacies may cause the consumers to pay more for the prescription of medicines over the internet due to the high shipping cost and non-coverage of insurance schemes. There is also a concern with respect to the qualifications and credentials of the physician who is prescribing the medication.

CONCLUSION

With the increasing number of diseases and health problems there is a change in the attitudes and views on health. This change in the stake holder's demands has led to a paradigm shift in the field of health care.

With the changing demographics, technology and changing health care scenario it is not far that the health service providers will shift to e-health.

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