eHealth: The Mainstay of Healthcare Delivery in the 21st Century

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ABSTRACT

The demand and cost of healthcare are on the rise, but it is still important to optimize the care of all patients, while containing the cost of healthcare. There is an increasing need to develop systems that deliver good-quality health care and are cost-effective, especially in developing countries. Due to technological advancements, new healthcare delivery models are being developed to improve healthcare accessibility, especially to distant areas and for emergencies. One of these models of healthcare delivery is eHealth. There is a wide variability in the scope and focus of eHealth. eHealth is an umbrella term that includes telemedicine, mHealth, telecare, ePublic health, eMental health or telehealth. Artificial satellites, internet, mobile communication and cloud communication are some of the several ways that have been identified to be used for providing eHealth services, all with their benefits and applications. The use of eHealth in the delivery of healthcare has a wide range of identified benefits for the service users (clients and patients) and service providers (health professionals). Various barriers to healthcare delivery are set to be broken by the optimal utilization of eHealth. In spite of all these benefits, eHealth is not without its potential risks and challenges. To improve the viability of eHealth in the market and increase its use globally, authors therefore recommend that the risks have to be minimized and barriers lifted.

Keywords: eHealth, Healthcare delivery, 21st century technology, telehealth, ePublic health

INTRODUCTION

The demand and cost of healthcare are on the rise. This has been largely attributed to the world aging population and inadequate resources (funds and manpower) to sustain the continuous increase (American Hospital Association, 2002; Sneha and Straub, 2017; Sneha and Varshney, 2006). In spite of this increase demand for healthcare services, it is still important to optimize the care of all patients, while containing the cost of healthcare (Miyazaki et al., 2012). To assess quality of care provided to patients, a system that is patient-oriented is fundamental (Rao, 2002). There is an increasing need to develop systems that deliver good-quality health care and are cost-effective, especially in developing countries (Rao, 2002).

Kielland Aanesen and Borras (2013) explained that advances in treatment methods, the world aging population and improved accessibility to healthcare service are rapidly changing healthcare delivery around the world. There is an increasing need to develop cost-effective methods that can be used to deliver optimal healthcare services to a large number of people (Jai Ganesh, 2004). Due to technological advancements, new healthcare delivery models are being developed to improve healthcare accessibility especially to distant areas and for emergencies (Kielland Aanesen and Borras, 2013). Models of improving healthcare through information and communication technology
methods are being developed to meet the demand of healthcare services. One of these models of healthcare delivery is eHealth.

Literature suggests that there is a wide variability in the scope and focus of eHealth, as shown in definitions of different authors. Ossenbaard and Van Gemert-Pijnen (Ossenbaard and Van Gemert-Pijnen, 2016) defined eHealth as the use of information and communication technology to reinforce health and healthcare through the delivery of preventive, educative, and therapeutic services, independently of time and place. It is also defined as “patients and the public using the internet or other electronic media to disseminate or provide access to health and lifestyle information or services” (Gustafson and Wyatt, 2001). More elaborately, Eysenbach (2001) explained that eHealth is “an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the internet and related technologies.” In a broader sense, the term, eHealth, is viewed as a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve healthcare locally, regionally, and globally, through the use of information and communication technology. Although variations in definition exist, it is opined that communication is the general theme of eHealth (Marcus and Fabius, 2005). eHealth is an umbrella term that includes telemedicine, mHealth, telecare, ePublic health, eMental health or telehealth (Mea, 2001; Ossenbaard and Van Gemert-Pijnen, 2016).

Technological advancements have been remarkable in the past two decades. Since the advent and popularization of the internet in the 1990s, several subject matters have been popularly searched, one of which are health-related topics (Ossenbaard and Van Gemert-Pijnen, 2016). This popularity has led to an exponential growth of eHealth in the last 15 years, despite concerns that health officials may have (Institute of Medicine (US) Committee on quality of health care in America, 2001). Over the years, the eHealth industry has evolved from focusing on hardware, systems architectures and databases to the use of ICT to facilitate communication with healthcare professionals and decision making, with emphasis on organizational and human factors (Pagliari et al., 2005).

MEANS OF PROVIDING eHealth SERVICES

eHealth is a broad concept, delivering healthcare through different systems. Artificial satellites, internet, mobile communication and cloud communication are some of the several ways that have been identified to be used for providing eHealth services (Srivastava et al., 2015). Satellites have been especially useful in developing countries where internet accessibility is still poor (Amble et al., 2004; Chronaki et al., 2007; Malik, 2007; Rajashekhar and Ayyangar, 2012; Lach and Vazquez, 2017; Sachpazidis et al., 2008; Sangal et al., 2004; Storetmann, 2014; Tyrer, 2009). Due to the explosive use of mobile phones across the globe, mobile communication is the most popularly used mode of eHealth services (Akter et al., 2013; Huang et al., 2012; O’Reilly and Spruijt-Metz, 2013; Rubrici et al., 2014). All the different means of providing eHealth services have their advantages and disadvantages (Srivastava et al., 2015), these have to be considered before selecting the best method to be used. At present, the internet has proved to be one of the major sources of health information and means of providing eHealth services (Connolly and Crosby, 2014).

BENEFITS OF eHealth

The use of eHealth in the delivery of healthcare has a wide range of benefits for the service users (clients and patients) and service providers (health professionals). A major benefit that has been identified is the empowerment of patients (Kontos et al., 2014; Kreps and Neuhauser, 2010). Through the use of the various means of providing eHealth services, healthcare providers can communicate with patients easily and more frequently, and can address their health concerns. eHealth has promoted public health considerably in the past decade, as public health concerns can be easily addressed (Kuijpers et al., 2013; Lindsay et al., 2009; Smith et al., 2009; Steele et al., 2009; Vuong et al., 2012). Cobb et al. (2011) also stated that support groups are formed to give necessary support to eHealth users. Through the use of eHealth, health information can be provided to service users, individuals can book or alter their hospital appointments, get their prescriptions and sufficiently interact with other service users and health care providers (Sudbury-Riley, 2018).

Furthermore, eHealth has been proven to be beneficial in improving the efficiency of healthcare practitioners (Car and Sheikh, 2004; Katz et al., 2003). It reduces waiting time in clinics and time of burdensome consultations (Jennett et al., 2003). Literature also suggests that it helps to avoid unnecessary referrals, hospital visits and hospitalizations. It is opined that this is because patients can be adequately monitored, patients’ information can be easily accessed and decisions can be made earlier (Martinez et al., 2006; Pare et al., 2007; Seto, 2008; Wade et al., 2010). Ammenwerth and Shaw (2005) also stated that eHealth is expected to reduce the rate of medical errors
and violations that cause harm to patients. It aims to improve the record-keeping, retrieval and sharing of patients’ information (Pagliari et al., 2007). Proper implementation of eHealth has also shown to increase co-operation among service providers and partnering between several healthcare organizations (Miyazaki et al., 2012).

Various barriers to healthcare delivery are set to be broken by the optimal utilization of eHealth. Studies have shown that eHealth is effective in reducing the time to diagnosis, ensuring access of individuals in remote areas to healthcare and improving quality of life and patients’ satisfaction (McLean et al., 2013). Literature suggests that eHealth may deliver healthcare services at more effective costs, and may ensure that health care is delivered to relatively remote areas (Bashshur et al., 2013; De la Torre-Diez et al., 2015; Elbert et al., 2014; Eysenbach, 2001; Meier et al., 2013; Ross et al., 2015; Smith et al., 2015). More effective and efficient healthcare services would be delivered to several citizens, providing easy access to information and self-care (Scholz, 2015). eHealth may help to improve access to healthcare globally, if its potentials are properly harnessed.

RISKS AND CHALLENGES OF eHealth

In spite of all these benefits, eHealth is not without its potential risks. Some health care professionals have concerns about the use of eHealth services. One of these concerns is the safety of eHealth. A dysfunctional eHealth system may issue erroneous patients’ information, advice and even support (Fernando et al., 2004). How secure are information stored via eHealth? How private are patients’ data kept? These are questions that are yet to be answered. The system had been identified as not sufficiently secure (Car et al., 2007). Data stored may be manipulated, and this may cause erroneous judgements to be made (Miyazaki et al., 2012).

Asides the risks that have been attributed to the adoption of eHealth for healthcare delivery, there have also been challenges that have been identified. Sustainability of the eHealth system, education and training of all service users and providers, availability and acceptance of necessary technology have been suggested as possible bottle necks that need to be resolved before eHealth can be fully implemented globally (Miyazaki et al., 2012).

More noteworthy, is the fact that in spite of the wide coverage of eHealth, there is still a considerable disparity in equity of access (Viswanath and Kreuter, 2007). This is attributed to poor technological advancements in middle- and low-income countries. In addition, a lot of individuals in this country have been reported to be less likely to seek health information from online sources (Gibbons et al., 2011; Viswanath, 2006; Zach et al., 2012). This may be due to poverty or low levels of education.

CONCLUSION

The eHealth system holds a lot of benefits in the world of healthcare delivery. These benefits can be harnessed properly to improve healthcare delivery in most parts of the world, especially in developing nations. However, the system has to be evaluated to minimize its risks. Minimization of potential risks will improve its viability in the market and increase its use globally.

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