Remote Services for E-Health in Developing Countries

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ABSTRACT

This paper is a positional paper that is set to take inventory of existing innovative ICT solutions in health service delivery (e-health) in rural community and to open up researches into the acceptability and utilization of various ICT solutions in health services in developing countries. The assessment is based on the other subsequent works of other Authors who have researched into electronic health solutions in developing countries. This paper also focuses on what is e-health? e-health is the use of information and communication technologies (ICT) for health. It is recognised as one of the most rapidly growing areas in health today.e-Healthcare can be defined as the use of ICT to support the delivery of healthcare support and services directly to people outside the conventional care centers such as Hospitals or residence. People in rural and remote communities stand to benefit from eHealth in its many forms like e-Health records, high speed broadband, telehealth and online health information. The purpose of this is to ensure that information on these issues is readily available to people in rural and remote areas and that those involved in their management remain aware of the aspects of those initiatives that are particular to such areas. As in case of India 70% of the rural population has very poor access to healthcare. 76% of the medical facilities are concentrated in urban areas, and there is an overall shortage of medical personnel. The technology enables rural patients to reach urban doctors through a telemedicine solution.

The above abstract focuses on the meaning of e-health, its various forms, its functionality & importance and also its usability in developing countries.

Key words: Developing countries, E-health, E-health records, Health services, Rural community, Telehealth

Introduction

In recent years Information technology has a great impact on our daily lives .IT has gifted us with many more convenient ways to accomplish daily tasks by diminishing the impact of long distances in both personal and business interactions. Today, we need to go shops, offices to fulfil our daily requirements, we can order groceries online and pay bills electronically,

conduct research for school projects, and send an e-mail to any person living anywhere by using an Internet-connected computer. Information and Communication technologies (ICT) have tremendous contribution in development of country and have potential for economic growth and social empowerment. Rural economies can be benefited from ICT by focusing on social production, social consumption and social services in the rural areas (Charru Malhotra) (E- HEALTH AND ITS IMPACT ON MEDICAL PRACTICE, 2008). Due to advancement in information and communication technologies people are expecting more and more from it as in, they have raised expectations for health, high expectation of coverage, service delivery and data management even in the remote rural communities of developing countries (Olukunle). One of the healthcare challenges that many countries are facing is that the level of medical services in remote regions is worsening compared to medical services in the large cities. The reason is, skilled doctors from rural health centres and clinics are moving to the developed urban hospitals where they can be close to their professional peers and to the nation's medical experts. ICT has the potential to impact upon almost every medical body of the health sector. It is noted that emergence of ICT supported health service or electronic health (e-health) has reduced the cost of health care and increased efficiency through better data management and transfer, better management of diseases, better knowledge transfer among many other positive effects. International health organizations have invested in developing ICT for health service delivery and monitoring, some are for urban environment and others for the rural communities having low accessibility to health services. These types of investment are meant to develop ICT solutions for health services most especially at rural community (Olukunle). This paper frames the discussion of e-Health, e-Health activities or types, benefits of e-Health services with some examples and acceptance of e-Health in developing countries.

What is e-Health?

E-Healthcare can be defined as the use of ICT to support the delivery of healthcare support and services directly to people outside the conventional care centres such as Hospitals or residence (Sharma, 2011).
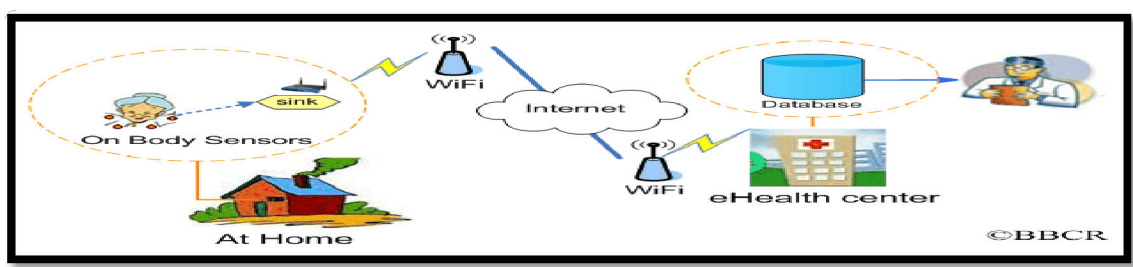
Figure 1: Bibliography on Secure E-Healthcare Systems

According to WHO, E-health is the transfer of health resources and health care by electronic means. It encompasses three main areas (Remote healthcare solution, 2013) (Trevor Lewis):

1. The delivery of health information, for health professionals and health consumers, through the Internet and telecommunications.

2. Using the power of IT and e-commerce to improve public health services, e.g. through the education and training of health workers.

3. The use of e-commerce and e-business practices in health systems management.

E-health provides a new method for using health resources - such as information, money, and medicines -and help to improve efficient use of these resources. The Internet is the way to provide a new medium for information dissemination, and for interaction and collaboration among institutions, health professionals, health providers and the public (eHealth Records, High Speed Broadband, Telehealth and More).

Materials and Methods

There are many more services or systems that are at the edge of medicine/healthcare and information technology such as,

1. Electronic health records: it enables the communication of patient data between different healthcare professionals (GPs, specialists *etc.*);ePrescribing: it gives access to prescribing options, printing prescriptions to patients and sometimes electronic transmission of prescriptions from doctors to pharmacists

2. Telemedicine: it provides physical and psychological treatments at a distance, including telemonitoring of patient's functions.

3. Consumer health informatics: it enables use of electronic resources on medical topics by healthy individuals or patients;

4. Health knowledge management: it helps with health related study material , *e.g.* in an overview of latest medical journals, best practice guidelines or epidemiological tracking (examples include physician resources such as Medscape and MDLinx);

5. Virtual healthcare teams: it is consisting of healthcare professionals who collaborate and share information on patients through digital equipment (for transmural care);

6. mHealth or m-Health: it includes the use of mobile devices in collecting aggregate and patient level health data, providing healthcare information to practitioners, researchers, and patients, real-time monitoring of patient vitals, and direct provision of care (via mobile telemedicine);

7. Medical research using Grids: it is a tool with powerful computing and data management capabilities to handle large amounts of heterogeneous data.[6]

8. Healthcare Information Systems: it is also often refer to software solutions for appointment scheduling, patient data management, work schedule management and other administrative tasks surrounding health (eHealth).

E-health Services in Developing Countries

In May 2005 the Fifty-eighth World Health Assembly adopted Resolution WHA58.28 where they have establishes an e-Health strategy for WHO. The resolution encouraged Member States to plan for appropriate e-Health services in their countries. On the same year, WHO also launched the Global Observatory for e-Health (GOe), an initiative dedicated to the study of e-Health—its evolution and impact on health in countries. The Observatory model provided with combination task of WHO coordination regionally and at headquarters to monitor the development of e-Health worldwide. E-Health is transforming the delivery of health services and systems around the world, WHO is playing a vital role in shaping and monitoring its future, mainly in low- and middle-income countries (Remote healthcare solution, 2013) (Trevor Lewis). E-health applications are highly dependent on technologies like networks, high-speed transmission, access facilities and the associated costs, local network infrastructures – straight way which are highly dependent on local economies, the first step in the chain of implementation. Therefore on these bases we can broadly classify countries into three main economic groups, based on average income per inhabitant (Implementing e-Health in Developing Countries Guidance and Principles, 2008), the "rich" countries, and the country where the average annual income per person is in the order of USD 10,000; this group includes the G8 countries. Around one billion of the planet's inhabitants live in these countries. The least developed countries, country with an average annual income per person less than USD 1,000, which account for two and a half billion people. Countries in transition with middle income levels, particularly these countries are undergoing rapid developments such as China, India, Brazil and Viet Nam. Some of these countries together form a group which is known as G20. Three billion individuals live in these countries. However, the level of technology facilities in rural areas is very low due to non availability of basic amenities and utilities like electricity and communication facilities (eHealth Records, High Speed Broadband, Telehealth and More). Therefore ,the needy person need to cross extra mile in finding solutions which will be sustainable in such communities with lack of basic amenities, poverty ridden with low economic value. According Peter Dury's (2005) observation e-Health model can be established in wealthy countries which have developed national and local ICT infrastructures with robust health information which differes from the ones that can be implemented in developing countries with high poverty level and low

infrastructure. Efforts to establish eHealth in developing countries can be minimised with provision of alternatives for infrastructures as using solar panels for health information, provision of personal computers (PCs) and mini laptops with internet connections, before thinking of the information system implementation itself. Also due to low level of economy, developers have to think in terms of adopting open source software (FOSS) for health services monitoring (Olukunle).

The above information focuses on the meaning of e-health, its various forms, its functionality & importance and also its usability in developing countries. Health systems in low- and middle-income countries continuously facing considerable challenges in providing high-quality, affordable and universally accessible care. And to overcome such situations policy-makers, donors and programme implementers are searching for innovative approaches to eliminate the geographic and financial barriers to health. This has been resulted in mounting interest in the potential of e-health and m-health in low- and middle-income countries (Trevor Lewis) (Whitepaper, 2010).

Developing countries are experiencing an unrivalled increase in the number of cell phone users and internet technologies users, also a decline in the price of devices and services. Due to this, many health programme implementers and policy-makers are exploring the extent to which e- and m-health can help to address the challenges faced by resource-constrained health markets in terms of the availability, quality and financing of health care. This increasing interest is evidence of the growing number of events, web sites and literature focused on e-health, including the Saving Lives at Birth Grand Challenge (Trevor Lewis) (Whitepaper, 2010).

Result

Healthcare IT Use Continues to Rise in Singapore: Barriers to EMR and HIE Adoption Chart: Doctors in Singapore report many benefits of HIE, such as improved decision-making ability and reduced medical errors, it appears many hoped-for economic benefits have dropped-off in the past year. Fewer doctors report reduced service costs, reduced patient waiting times and reduced risk of litigation. Moreover, improvements in the ability to see more patients daily and achieve a better work-life balance have not been realised; in fact, they appear to be declining.

	8-Country Total				Singapore Total			
	2011	2011	2012	2012	2011	2011	2012	2012
	Ranked Most Important	Rank	Ranked Most Important	Rank	Ranked Most Important	Rank	Ranked Most Important	Rank
Cost to my organisation	14%	1	24%	1	7%	3	28%	1▲
Concerns about privacy and security of patient data	13%	2	11%	2	21%	1	6%	5▼
Concern about loss of productivity/too time consuming to input data	10%	4	10%	3▲	9%	2	14%	2
The system is too difficult to use	5%	6	8%	4▲	3%	7	3%	7
IT systems that can't 'talk' to each other	11%	3	8%	4▼	3%	7	6%	5▲
Lack of technical expertise to manage implementation	4%	7	6%	5▲	6%	4	7%	4
Lack of easy access to a computer	2%	9	5%	6▲	4%	6	9%	3▲
Low IT literacy/lack of training amongst clinicians and staff	5%	6	5%	6	7%	3	6%	5▼

Source:www.accenture.com/sg-en/Pages/insight-acn-doctors-survey-profile-healthcare-it-benefit-hie-chart.aspx -Accenture Doctors Survey

Figure 2: Barriers to EMR/HIE Adoption

Centre for Health Market Innovations

Technology-enabled programmes are taking place in all lower-income countries, as shown in Fig. Southern Asia – India particularly leads in terms of the absolute number of technology-enabled programmes, but the percentage of such programmes is relatively uniform across regions.
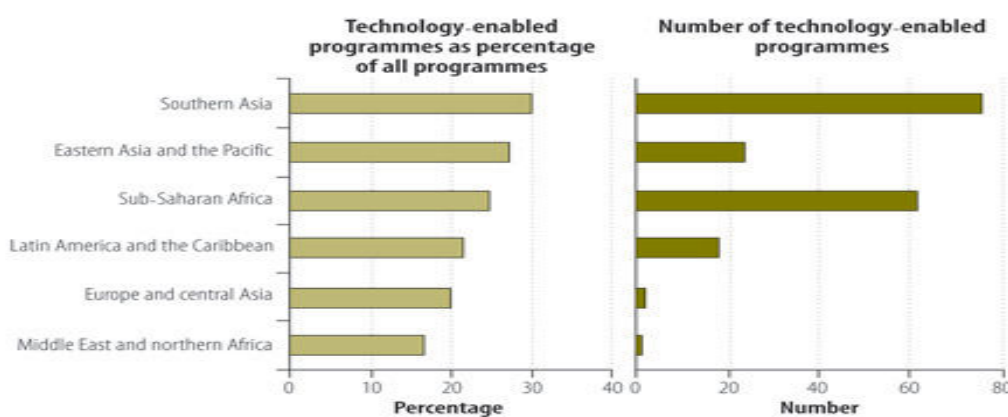
Source:www.who.int-E-health in low- and middle-income countries: findings from the Centre for Health Market Innovations

Graph 1: Technology Enabled Programmes by Region

Conclusion

As with all mentioned information, it is clear that various entities – people, Institutions, organizations, corporations, associations, of developing countries. – can be the beneficiaries of the e-Health revolution, or the victims of it. Hospitals and hospital associations in developing countries can opt for the former category, by properly playing their role in managing the transformation of the health system that is being driven by the e-Health and with provision of alternatives for infrastructures before thinking of the information system implementation itself. Also for low level of economy, developers have to think in terms of adopting open source software (FOSS) for health services monitoring. The remote services for e-health in developing countries can have a great success.

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