A Meta-Analysis on Public Sector E-Health Practices to Suggest Emerging Areas of E-Health Services Within Sri Lanka

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Abstract – *E-Health is directly intertwined with Information Technology. It is a key e-Governance domain which has a high tendency of growing rapidly to serve the society's health needs. In general it is obvious that e-Health concept does not have a considerable sound within Sri Lanka.*

This study intended to carry out a Meta-analysis and find out the untouched areas of e-Health. Through that, there was an expectation to give a reflection on such areas to attract policy makers to enhance e-health services in Sri Lanka. Previously done research results and few interviews with respective professionals has conducted to mitigate the analysis.

The investigation reflects that, even there are many e- Health exposures in Sri Lanka due to lack of intermediate coordination the processes has broken the flow of distribution. Research investigations sound that only 1% of the e-Health implementations are successful within the country. Along with a side to side coordination it is vital to look for more opportunities in m-Health and e-health awareness programs to promote the present e-health practices as well as the new trends of e-Health services in Sri Lanka.

Keywords: e-health, teleHealth, m-health, G to P governance

I. INTRODUCTION

Today health care and its services play a vital role in our lives. The e-health concept was invented with the intention of enhancing the interaction, with the use of computer technology, among the parties who involved in the healthcare and its peripherals. As stated by the American College of Physicians, e-health allows the various processes referring to health sector as medical informatics, public health, clinical practices, and other health services to intersect and deliver the services with the higher performance through the internet and related technologies.
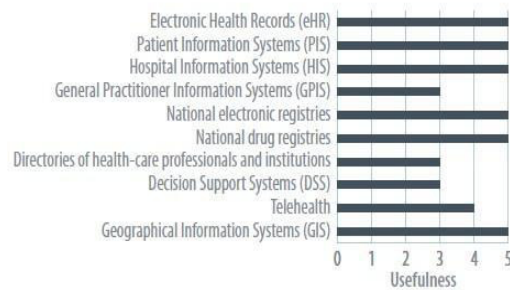

Figure 1. E- Health activities (WHO, 2006)

Main e-health related activities are recognized as hospital information systems, clinical information systems, integrated health information exchange services, general precision information systems, and national drug registers and telemedicine. Figure 1 illustrates the other activities and its usefulness, but In general it is obvious that e-health concept does not have a considerable sound within Sri Lanka and the knowledge about the e–health is in a minimum level. As researchers reveal, in year 2005 it was taken an important action to provide and implement necessary infrastructure and access capabilities through the country to connect public and private. So e–Sri Lankan initiative is recognized as the key building fundamentals for enabling environment for use information technology with the health sector (WHO, 2006). Hence in present it has increased the use of e– health related technology services in Sri Lanka into some extend so it is vital to find out what are the current practices of e-health in Sri Lanka and to seek the involvement of the society with the available e-health services.

As per the investigations, only 1% e–health

implementations are successful in Sri Lanka. This has been happened because of the lack of integration and coordination between the e-health related processes. As mentioned in the above of this paper, e- health is used up to some extend in Sri Lanka. The most popular type of e health services is maintaining the online ortals related to the health sector that makes the patients aware about various health factors. But a lack of moving to telemedicine can be seen to enhance the performance of the health sector due to the fact that it needs advanced technologies for the operations. This study has largely investigated the implementations done in e-health within the country and looked in to several empirical studies done on e-health practices in Sri Lanka.

The expectation of this research was to conduct a meta-analysis on e–heath practices in Sri Lanka and find out the emerging areas of its and attracting the policy makers towards those critical areas to find solutions to enhance the processes and enhance the interactivity among all participant of the health sector.

II.   RESEARCH DESIGN

The high level research questions sat for the research was,
- What are present practices of e- Health in public health system?
- What are the key areas need to be stressed upon for a robust e-Health establishment?

In order to finding the facts to the research questions, "Meta-Analysis" was chosen because Meta-analysis is a statistical technique for amalgamating, summarizing, and reviewing previous quantitative studies. Interview was the main facts elicitation technique used and also the online source which publishes the previous research work and studies related to e-Health in Sri Lanka were used to enrich the investigation.

III.   LITERATURE BEHIND THE ANALYSIS

The term "e-health" is commonly used when information and communication technologies are used in health service as stated in National e-Health Strategic Plan issued by Ministry of Health Sri Lanka. There are a number of terms which have the same meaning and can be used interchangeably. Some of them are teleHealth,

online Health and m-Health. Though Sri Lanka has not yet adopted e-health solutions to serve the whole nation, there are several private institutions which have adopted and nurtured e-health solutions and ICT to help those patients in need. A significant milestone in Sri Lankan health services will be made by the Ministry of Health by launching the fundamental steps of National e-health Plan (NeH-Strategic Plan) which in other words is a master plan to govern national e-health care systems under one roof and keep them in shape. Figure 2 depicts the architecture of the NeH.
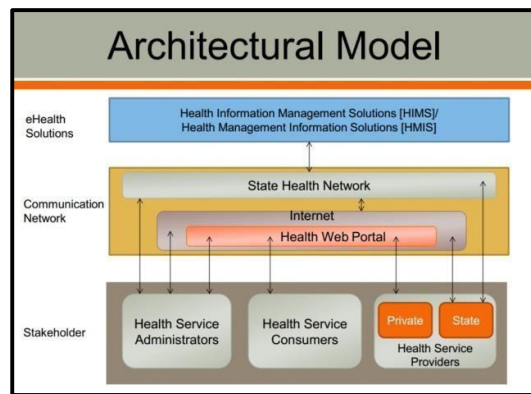
Figure 2.   Architectural Model of e-health (WHO, 2006)

As mentioned in the regional workshop on developing national e-health strategies which was held in 2013, the vision of the NeH – Strategic plan is "to streamline the adoption and use of ICT in the Healthcare sector of Sri Lanka". Under this vision, ministry of health will strive towards achieving ICT solution to suit the needs of Sri Lanka to improve the four basic factors. They are quality, efficiency, patient safety and cost effectiveness.

Under this new strategic plan, several sub organizations will come in to act such as provincial departments of health services which will handle healthcare need of regional sectors, Faculties of medicine/dentistry of the state universities; which will inculcate and teach university students on up to date or state of the art e-Health practices. Furthermore, the recreational plan will consist of three major processes which will enable the ease of implementation and planning. Building the necessary capacity to plan and streamline the e-Health activities will be the first step followed by development of the infrastructure for the use of ICT. This second step is considered a task to be

completed with a lot of effort. As a developing country, Sri Lanka will have to strive for the betterment of ICT infrastructure. Distribution of new computers or laptop machines will consume a large amount of labor force and time. But laying up this second step is crucial in the process of the recreational plan. The third and the final process of the strategic plans are to maintain and sustain the progress. With proper management, this step would be easily achieved.

Having the NeH-Strategic plan in one hand, it is wise to discuss about thecurrent status of ICT and telecommunication technology that is available in Sri Lanka.Dr. Rohana B. Marasinghe has mentioned in his article "TeleHealth – bringing healthcare to one's doorstep: How ready is Sri Lanka?" telecommunication devices can be divided in to two main kinds such as mass communication and one to one contact.

Television and radio act as mass communication media while telephone acts like a one to one contact media. As a matter of fact, at present, the tele density rate which is synonymous for phone lines per person, for mobile phones is greater than that of the land lines and shows an exponential growth rate. Dr. Marasinghe also specifies that the importance of understanding the concept that e-Health is not designed or expected to replace the present healthcare system in his article. It is rather emerging as an alternative way of reaching patients who need help.

One leading article titled "Medical students' knowledge and perceptions of e-health: results of a study in Sri Lanka" mentions that 88% of final year students of faculty of medical sciences, university of Sri Jayewardenepura have admitted that they had no e- health education or training of any kind. They also said that this is an issue to be solved in their medical curriculum. The article not only mentions the current shortcomings of university curriculum but also it points out that many of the university students have very poor access to computers and internet use. This is a major obstacle to overcome and somehow by getting pass that hurdle; we can easily achieve the lay up for ICT infrastructure followed by the stepping in the third process of the NeH plan; maintenance and sustenance.

In order to accomplish the NeH strategic plan,

there are several other sub plans being launched. Among them e-Health action plan which is updated on 08.02.2014 mentions the following five e-Health activities which are scheduled to be endeavored.

- Extension of Lab Information and Management System to all the units of MRI.
- Conduction of a survey on computer literacy among the staff of MRI
- Periodic training of staff on how to apply Health care ICT in day to day activities of MRI to improve the efficiency of services provided by MRI
- Update and maintain Tri-lingual website of MRI
- Awareness lectures on e-Health and the role of the m-Health Informatics to the whole staff

By successfully completing and maintaining these actions, Sri Lankan ministry of health expects an outcome of sustainable growth in e-health system.

IV.   PRESENT E-HEALTH SITUATION IN SRI LANKA

In this research researchers are mainly consent about only government sector. So researchers were conducted few telephone conversations and interviews with professionals and specialist doctors who are working in government hospitals and health ministry in Sri Lanka. Also researchers had telephone conversations with few managers in Sri Lanka Mobitel who have conducted m-health projects in Sri Lanka.

As they said currently Sri Lankan Health Ministry have planned so many ICT projects for enhance e-health usage in Sri Lanka. But still they couldn't reach that much of e-health usage, because Sri Lanka is facing so many problems such as lack of computer literacy among Sri Lankans and technical issues with government organizations. But now Sri Lanka Mobitel is conducting m-health programs in Base hospital Dompe, to facilitate Sri Lankans via m-channeling. Through that patients can ask for a doctor with sending a SMS. So that is the only method that Sri Lankan public sector health system is having as a successful e- health technology other than web portals.

Using the web portals is the most frequently use e-health service in Sri Lanka. Web portal provides the facility of providing information relevant to the

health sector to the public. The patients and the other community who are in the thirst of seek information can access the web portals and catch the information they need. Sri Lankan Government web portal (Gov.lk) is the most popular example for this. It provides the capability of getting answers for repeatedly asked questions by people, important information about health problems (Health Net, Happy Life and etc.), and as learning source for medical students (Wedanenasala). Some of the other information provided are the annul records of the distribution of the deceases, maintaining frequently ask question criteria in order to provide capability of clarify the doubts of the community relates to health and provide all the information about the health sector related organization and doctors to aware the public. Those web portals facilitate the community with the preferred language of the users basically Sinhala, Tamil and English. So it has increased the efficiency of the use.

Another section in e-health is Telemedicine. It is a technology of providing the healthcare services via the internet to the community. The advantage of the telemedicine technology is the ability of contact with the consultants or physicians although they are not present at the same location. This facility consists of all the services for send or exchange medical and social data including doctors to doctors and doctors to patients. Also it includes remote patient management, teleHealth, tele-care, tele-discipline and m-health.

According to the meta-analysis, in context to the Sri Lanka, the first and the most projects that are related to telemedicine were started in November 2003. According to Dr. Palitha Gunawardane, this was executed as a pilot project of the Ministry of Health in Sri Lanka and the World health Organization (WHO). World Health organization funded this project as a part of their implementing South East Asia Region Health Telematics System. These health telematics initial projects were started in five districts in Sri Lanka. Such as General Hospital-Kandy (Telemedicine Hub and the Centre for Telemedicine), District Hospital-Tissamaharama, District Hospital-Hambanthota, Base Hospital-Hambantota, Base Hospital-Ampara, Base Hospital-Dehiattakandiya, District and General Hospitals-Badulla, District Hospital-Bandarawela and General Hospital-Anuradhapura. (Telemedicine

implement experience in the Sri Lanka, 2008).

In addition to that in 2009 ICTA together with University of Colombo School of Computing accelerated a project called "Vidusuwa" for remote patient care at rural hospitals. Marawila base hospital to Dankotuwa district hospital has taken for the pilot project and mainly this project intended to undergo the patient diagnosis through ICT.But still this is partially successful due to the issues in the data transfer layer of the communication.

Sri Lanka Health Telematics (SRLHT) implemented as a result of the pilot project was a low cost distributed system for helping to the medical professionals to go for alternative solutions and take advice from their medical consultants and peers on medical and health care problems, case studies and continues the medical related education process.

When researchers are talking about how IT facilitate doctors in government sector, currently they have using systems for storing patient information and report details. According to official web site of ICTA they had installed an open source Hospital Information Management System (HIMS) in various government hospitals as a part of the South East Asia Region of WHO (SEARO/WHO) project. In 2014 they have conducted few e-health activities such as, allowance of Lab Information and Management System to all the units of MRI (Medical Research Institute) and conduction of a survey on computer literacy among the staff of MRI.

V.   PROBLEMS AND SOLUTIONS

The foundation for e-Sri Lanka is commanded by Information and Communication Technology Agency (ICTA) of Sri Lanka. The country has fortunate foundation and organization support to introduce e- health activities. Many organizations and individuals has designed and implemented e-health related activities but the efforts lack central coordination. So because of that Sri Lanka couldn't reach that much of improvement on e-health. According to the research paper on Global Observatory for e-health (GOe) Survey in Sri Lanka (2010), The Global Observatory for e- health (GOe), is an important initiative established in 2005 by the World Health Organization (WHO),

designed to provide countries with strategic information and guidance on effective, practices, policies and standards in e-health.

The main problems that Sri Lanka has facing are lack of computer literacy and lack of human resources who having considerable knowledge about e-health. Affording to the research paper on Developing Human Resources Capacity in Health and Medical Informatics in Sri Lanka, as the solution for this problem the Ministry of Health gave the birth to the MSc in Biomedical Informatics at the Postgraduate Institute of Medicine in the University of Colombo. Thus through this program can develop e-health in Sri Lanka. The future peers of healthcare earners can be prepared for this by incorporating training in ICT skills into medical and other health sciences programs.

According to the official web site of Medical Research Institute of Sri Lanka, the MRI had conducted periodic training of staff on how to apply Health care ICT in day to day activities of MRI to improve the efficiency of services provided by MRI and awareness lectures on e- health and the role of the MO-Health Informatics to the whole staff.

Current network infrastructure in Sri Lanka is not worthy to enhance e-health technologies. Because health is critical case and can have any bugs with communications. Therefore so many people in health sector don't like to move for e-health solutions under lack of resources.

Therefore it is vital to organize e-health awareness programs within the country and let the involvers of the public sector health system know the avenues of e- health and also the general public. As per the investigations it is a realization that quality drop of the data transfer layer of communication networks is a major issue especially when it comes to telemedicine. Finding more accurate ways to transfer data without any quality drop is a key challenge and a key research area to facilitate the e-health services within the country.

VI.   CONCLUSION

By way of conclusion, Sri Lanka has so many limitations and therefore couldn't achieve that much of improvements in e-health usage in government sector. As solution for that Ministry of

Health has conducting so many projects to enhance the development in e- health and to facilitate Sri Lankans with effective health services. Conducting awareness programs and more research on transferring medical reports through communication networks will be highly needful to successfully establish the e-health concept within Sri Lanka.

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