An evaluation of ehealth systems implementation frameworks for sustainability in resource constrained environments: a literature review

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Abstract

The burden of disease is higher by far in developing countries than in the developed world. Although significant progress has been made towards health related Millennium Development Goals (MDGs) in the past years, developing countries still lag behind in achieving these targets. Some innovative ways of solving healthcare problems have been introduced to improve healthcare services and achieve healthcare goals. Information and communication technology (ICT) for health, or eHealth, is one of the innovations that have been brought to the healthcare sector to improve the efficiency, effectiveness, access and quality of the healthcare system. It is believed that eHealth can help reduce the healthcare budget and relieve the shortage of healthcare professionals. This is done through remote diagnosis, remote monitoring of patients' conditions and the electronic sharing of patients' medical records. It has been reported that many ICT for health systems could not demonstrate sustainability beyond the pilot phase, or after the seed money of the project had dried up. Some of the sustainability challenges of eHealth implementation in resource constrained environments are related to weak ICT infrastructure; shortage of funding; lack of technical skill to support technologies brought from the developed world; and the introduction of technologies that were not innovated in the context of developing countries. Although the implementation of successful eHealth systems is a global challenge, developing countries exhibited much more failures than the developed ones. Several eHealth implementation frameworks have been reported on literatures. However, this paper assesses the ability of these frameworks to ensure sustainability of eHealth systems in resource constrained settings. The evaluation framework for sustainability of eHealth systems considers the three pillars of sustainability (social, environmental and economic factors) to evaluate eHealth system's operational environment, and technological factor to assess the systems of interest. The majority of eHealth sustainability factors link to the environments in which systems function. It is also observed that most eHealth success challenges are associated with system environments that differ significantly in developing and developed worlds. All four eHealth frameworks evaluated in this paper address the technological factors; but they either lack depth, or miss some of the system environment factors (social, economic and environment). Therefore, an eHealth framework's ability to ensure sustainability in resource constrained environments depends not only on technology, but is also determined by the social, economic and environmental aspects of the system environment.