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LITERATURE REVIEW

E-Health status in Saudi Arabia: A review of current literature



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Abstract

Due to recent and growing interest in e-health initiatives in Saudi Arabia, improving the state of knowledge pertaining to current e-health programs, initiatives, and efforts is of critical importance to academics, clinicians, and policy makers. In this research review the literature on specific applications of e-health in Saudi Arabia is considered, including studies investigating Electronic Health Records (EHR), Electronic Medical Records (EMR), studies investigating Computerized Provider Order Entry (CPOE) and Clinical Decision Support Systems (CDSS). Moreover, this paper explores studies on telemedicine, mobile health, and other e-health applications. The findings reveal evidence that e-health in Saudi Arabia is growing as many organizational and individual initiatives have implemented e-health applications. However, the number of studies available about e-health in Saudi Arabia remains low. Data is limited to a few organizations and does not necessarily reflect the breadth and depth of the current and potential use of e-health for healthcare organizations in the region.

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Introduction

E-health as a relatively recent term, used interchangeably with health informatics, covering all types of electronic or digital processes in healthcare. E-health refers to all forms of electronic healthcare delivered via information and communication technology channels, ranging from informational, educational, and commercial, to direct services offered by healthcare organizations, professionals, and consumers themselves. Simply stated, e-health is making healthcare more efficient, while allowing patients and professionals to access and manage data in ways that were previously impossible [1].

The main purpose of this research review is to explore existing national e-health programs, initiatives, and growing efforts in Saudi Arabia. Some researchers have highlighted the state of e-health in Saudi Arabia from a descriptive perspective and found, that while many healthcare organizations in Saudi Arabia are using information and communication technologies and systems to enhance healthcare quality, there was no organized effort to create a national network and a national database for health records for all Saudi citizens [2,3].

In 2010, the World Health Organization called for more studies on e-health in developing countries [4]. Assessing the state of Saudi e-health challenges is a relevant and timely topic. Through this research the authors examined e-health programs and initiatives, highlighting the importance of investigating e-health challenges and developing recommendations. It is essential to have a clearer picture of the current status of e-health in Saudi Arabia.

The overarching research questions were: 1) What is the current implementation of e-health practices in Saudi Arabia? 2) What are the current and emerging e-health challenges in Saudi Arabia? 3) What are the recommendations to enhance e-health initiatives for Saudi Arabia?

There are five major health authorities which serve the majority of the population. The Ministry of Health (MOH) manages 60% of the hospitals in Saudi Arabia, while the other four authorities collectively manage approximately 20% in addition to another 20% managed by the private sector. The Ministry of Health (MOH) serves Saudi nationals and insured foreigners. The MOH is still working on connecting its hospitals to each other and creating a national plan for e-health. The Medical Services of the Armed Forces serves armed forces employees and their families. Some hospitals have computerized systems while others do not. Some of the health information systems used in these hospitals are coming from different vendors and are not yet integrated. The King Faisal Specialist Hospital and Research Center (KFSH&RC) serves Saudi nationals. The

hospital has connected with more than 12 MOH hospitals in joining the KFSH&RC's telemedicine network.

KFSH&RC has been developing its own e-health programs in addition to some ready-made hospital information systems. The hospital implemented enterprise resource planning (ERP) systems, Electronic Medical Records (EMR), Picture Archiving and Communication Systems (PACS), and a new health portal. The Ministry of National Guard Health Affairs (MNGHA) serves National Guard's employees and their families and Saudi nationals in specific cases such as cancer patients. The MNGHA has installed systems and networks in all of its hospitals and it has implemented EMR systems, PACS, and other systems. Security Forces Hospitals (SFH) serve security forces employees and their families. The SFH has an integrated information network and has integrated health information systems (HIS) [2,5,6]. Recommendations from future e-health assessment and implementation across Saudi Arabia could be scaled to integrate related data from these five health authorities.

Methodology

This research review aims to include the currently available knowledge of published work about e-health in Saudi Arabia. To answer the research questions proposed by this study, details about how each study was designed, what methods were used, and the nature of utilized materials, were assessed.

The inclusion criteria for this research review determined that retrieved articles would be published in English, and were from Saudi Arabia. Any article that proposed, described or discussed e-health or studied e-health applications in Saudi Arabia was also included. The exclusion criteria were that editorials were omitted as were articles written by authors in Saudi Arabia but did not discuss e-health in Saudi Arabia. Finally, articles and studies concerning health-related geographic information systems were not included.

The entire literature search was conducted on July 25, 2014. Four databases were searched. For the PubMed search, the researcher set the filter from January 1, 2003-June 30, 2014 extracting full text and abstracts. Then, the researcher searched PubMed for e-health (Telemedicine (MeSH term) OR Electronic Health Records (MeSH term) OR Computerized Physician Order Entry System (MeSH term) OR Clinical Decision Support Systems (MeSH term) OR Mobile Health (MeSH term) OR E-Health (keyword)) and found 29,949 articles. A second search was performed for Saudi Arabia using the same two filters as previously for the dates and full text as well as abstracts. This search yielded 13,590 articles.

When the researcher combined these two searches, 69 articles were identified. After reviewing these articles against

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