

Impacts of Paperless Health Information Management in Saudi Arabia

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Abstract. One the major advantage of the paperless system in hospitals is the ability to give valuable data and information for decision-making purposes to health managements. The primary objective is to enhance efficiency and quality of healthcare delivery. In order to accomplish these goals, the paperless system must meet interoperability standards, scalability, quality, timeliness and quality in data processing and storage. That being said, the primary objective of this study is to examine impacts of paperless health information management in a government hospital in Saudi Arabia. This research applied a case study method, and participants' data were analyzed via thematic approach. The study was carried out between November and December 2016. The findings explicate impacts of the paperless system in Saudi Arabia.

Keywords: Paperless system, EMR, Information Technology, HIS

1 INTRODUCTION

Wickramasinghe (2013) asserts that Medical information management involves information processing, cognitive activities, education, communication of medical tasks and research comprising of information technology and science that support all medical practices. Health information system involves not only physical components but also the explanation of formal medical terminologies, clinical protocols and communication and information systems. In healthcare institutions and organizations we have a huge amount of data and information production. These data, which might be of distinct nature and shape, types are stored and processed in various databases with distinct management platforms. Complexities of these kinds of organizations in storing their information coupled with high cost necessitate the employment of Health Information System (HIS). Adoption of Information Technology (IT) in healthcare leads to a paperless system which enhances the quality of patient care and efficiency. Healthcare providers are in a position to offer improved and efficient health services and document pertinent patient information via HIS. The following electronic systems are all classified under HIS; Computer-Based Patient Records (CBPR), Electronic Medical Records (EMR), Electronic Patient Records (EPR), and Automated Health Records (AHR). These systems help patient information to be recorded, stored and processed electronically (Schaper et al., 2014). For the purpose of this research study, the term EMR stands for all systems as mentioned earlier.

According to George & Duquenoy (2013), the notion of maintaining a paperless system in health information commenced back in the 1960s. Saudi Arabia adopted the use of EMR back in 1988 in order to enhance healthcare system and meets demands imposed by health

organizations (Hoyt & Yoshihashi, 2014). This system was approved as one of the fundamental priorities of the Saudi Ministry of Health (MOH) and be implemented countrywide. As a result, the ministry expects improvements in healthcare deliveries, enhanced flow of patient information, reduced patient waiting times and minimizations of errors and duplication of records. Some hospitals in Saudi Arabia have earned excellence awards for a successful implementation of EMR. Nevertheless, studies show that paperless systems are rare in Saudi hospitals. Implementation challenges of paperless systems have been indicated as the key factor hindering adoption of this system (Hoyt & Yoshihashi, 2014).

According to Wootton, R., & International Development Research Centre (2009), healthcare is classified as one of the significant issues in human life in both life and societal goals. The correlation between healthcare and IT is a mutual relation. Healthcare and hospitals require accurate and efficient information, and this cannot be accomplished without good health in body, brains, and psychology. IT has a crucial responsibility in streamlining and enhancing healthcare operational efficiencies. The role of EMR in health sector institutions is to minimize work complexity and help in transforming to the paperless system. IT is considered as an appropriate tool which enhances effectiveness and productivity of all agencies and can be applied to improve the competitiveness of institutions. Therefore, this paper focuses on impacts of paperless health management information in Saudi Arabia Hospitals.

1.1 Significance of the Study

This study focuses on the importance of paperless system in creating the managerial issues in hospitals. The study also examines rapid growth in information system and their significance to assist in controlling and managing healthcare sector in Saudi Arabia.

1.2 Saudi Arabia Health System

Saudi Arabia has been identified as one of the developing nation that is dedicated to adjusting to global technologies and developments to improve healthcare delivery to its citizens (Medinfo et al., 2015). The Saudi Arabian government has committed a lot of funds to heighten health delivery system with an objective of delivering free healthcare services to all citizens. Approximately 60% of 244 hospitals in Saudi Arabia are public hospitals. All of these public hospitals are supervised and maintained by Ministry of Health. The remaining 40% falls under University hospitals, private sector or other governmental institutions such as Ministry of Defense.

The public hospitals in the Kingdom offer healthcare services free of charge to all citizens at primary, secondary, and tertiary levels. For instance, in 2007, the Ministry of Health received 5.6% of total budget. In 2016, the Ministry received \$28 billion being the third ministry that received the huge considerable amount of money. However, the government minimized healthcare spending by 35% to \$28 from \$ 42.64. This presented an opportunity to the private sector to grow and invest in the Saudi Arabia healthcare. The demand for health services has been increasing. For example, Sweden's Diaverum, a dialysis treatment and renal care providers, projects to invest approximately \$133.26 over the next five years in expanding its clinics. The hospital institution expects to open 15 clinics in the Saudi Kingdom in those five years. Between 2010 and 2013 public hospital beds grow at a slower rate of 3.7% compared to private sector beds increments of 4.3% according to Ministry of Health. Outpatients in private sectors increased to 46 million in 2013 from 39 million in 2009 representing a 4% annual rise. Dubai Aster DM Healthcare in October 2015, invested \$136.13 at Sanad Hospital situated in Riyadh, increasing its ownership to 97%. UAE's Amanat

Holdings took 35% of Jeddah-based Sukoon International for a consideration \$53.3 in August 2015.

1.3 Literature review

In an attempt to establish a paperless health information system, the first EMR in Saudi Arabia was developed in the 1980s; this system could share health data across distinct organizations (International Conference on Informatics, Management, and Technology in Healthcare, In Mantas, J., In Hasman, A., & Househ, (2015). Efforts to adopt EMR were all implemented separately by other governmental hospitals and the Ministry. Hence, it has been a challenge to integrate patients' documents because patients have distinct records in different healthcare managed by the government agencies. This problem arises in most private and public healthcare in the Kingdom. So, Saudi Arabia has no standard paperless system. The existence of various healthcare organizations runs by different government bodies serves as the complicating factor in the implementation of the paperless system. For instance, there are those hospitals managed by the Ministry of Defense and Aviation and those that are under National Guard Health Affairs. Many of these institutions have achieved important achievements in several fields as well as EMR adoption. Nevertheless, non-MOH institutions selected systems and set their goals consistency with their desires led to a variation in the manner EMR were executed.

In 2004, United States created National Coordinator for Health Information Technology office in an attempt to establish a paperless health information system by 2014. Four central objectives were developed to act as a guiding principle to the adoption of IT in private and public healthcare sectors. These objectives were; implementation of EMR, creation of a secure countrywide health information network, application of personal hospital records, and use of dissemination of evidence, research, and quality measurement to enhance the public healthcare. Only 1.5% of healthcare institutions are fully paperless according to a recent study by Healthcare Information and Management Systems Society (HIMSS) whereas approximately 90 percent are at different stages of transition from paper-based health records (PBHR) to EMR. Results for this initiative are substantial despite the fact that they seem to be very slow. No health cares are paperless in Canada but at least 50% of hospitals are have adopted EMR and government has put measures of integrating paperless systems in hospitals. In 1988, National Health Service (NHS) in the United Kingdom set targets to have EMR adopted in all its hospitals by 2005. However, only 3% had implemented this system by 2002 (Hörbst & eHealth Conference. 2014).

In European countries, a high proportion of EMR is being applied at general practitioners levels. The percentages of general practitioners make use of EMR in Austria, Finland, Denmark, Sweden and Netherlands are 55%, 56%, 62%, 90%, and 88% respectively. In 2004, European Commission implemented two electronic health initiatives across the borders of its twelve member's states. In developing nations, there have been successful implementations of the paperless system. For instance, eleven hospitals and two hospitals are operating as paperless in Korea and Malaysia. In China, there are many hospitals using EMR.

2 METHODOLOGY

The research applied the qualitative descriptive method and thematic approach to analyzing participants' point of views. We managed to interview twelve participants. The participant must have been working or acting as a professional consultant to one of the following health organization; Security Forces Hospitals, King Faisal Specialist and Research Center, Ministry of Health, National Guard Health Affairs and Armed Forces Medical Services. The participants must have held one the following post; senior information officer or any other

equivalent senior position within the department of health information. Also, a member of board director or an executive person from Saudi Association for Health Informatics was eligible for our study. The interviews were carried out in November and December 2016. Each participant was interviewed for at least 50 minutes to 80 minutes using a well-structured questionnaire.

2.1 Result and discussion

All respondent agreed that paperless system in Saudi Arabia plays a significant role in enhancing patient care delivery and efficiency. "One of the crucial important of the paperless system is to improve patient access to credible and comprehensive to health information which translates to improved quality of care" one participant noted. EMR becomes a channel for faster and improved medical records sharing. One senior executive said that "sharing of health information in our systems results to lower management costs, minimizes medication expense and substantially reduces wellness program expenses." Clerical mistakes arising from prescribing errors are precluded by the new system of EMR.

All participants indicated that paperless system is a significant aspect in enhancing medication safety of the patient. It excludes medication mistakes arising from handwritten order and heightens interdisciplinary communiqué concerning patient health. "It is the vision of the ministry of health to enhance the standards, equitability, quality and availability of care in the Country. The department has created a five years plan and business strategy to accomplish its vision and has indicated paperless system as the fundamental enabler and agent." The department has partnered with IBM, international and national advisors to realize its vision and has created a paperless strategy. "In the ministry of health charter, the primary goals include; transforming healthcare delivery system to a reliable, first-class standards, enhanced patient care, connect healthcare providers at all levels and measure healthcare delivery performance."

A paperless system enables information to move instantly with the institution minimizing turnaround time for processing and obtaining lab work, medication delivery, and completing and scheduling radiology exams. "Contemporary University hospitals in Saudi Arabia experience information infrastructure around every hospital. Nevertheless, they are not integrated. HIS applied in these hospitals are emanates from different sources and serves only administrative and medical sides" senior executive in the ministry of health noted. The NGHHA has implemented more innovative computer networks that surpass 20,000 points in all its hospitals. At least 60 clinics and four hospitals are interconnected through an extensive area network. The NGHHA health cares are at par with King Faisal Specialist Hospital and Research Center (KFSH and RC) in automation. It has adopted Computerized Physician Order Entry (CPOE), EMR, EPR and Picture Archiving and Communication System (PACS) and the current health system.

The paperless system assists in standardizing healthcare procedures. Health data, knowledge and information from various hospitals at national level stages are be utilized to support health research. Vision declaration "quality, a safe, health system, based on patient-centric care guided by standards, enabled by eHealth indicates the significance of paperless system in the ministry of health.

2.2 Abstract and keywords

This research paper investigates impacts of paperless health information management in Saudi Arabia hospitals. In order to develop a comprehensive conclusion, the study adopted a case study approach of interviewing senior executive officers in healthcare sectors information departments. The study used semi-structured questionnaires. EMR systems in

health cares have substantial benefits. Not only has this system minimized the provisions for mistakes found in manual operations, but it also leads to an environmentally responsive paperless surrounding that enhances interaction among medical practitioners. This system enables access to patient's health records for necessitating easier decision-making process even in acute conditions where consultation and expertise of distance medical specialist might be needed. Paperless system also led to the elimination of eligibility issues, minimization of errors, and repository information for future researches, flexible billing methods and quality enhancement.

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2.6 References

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