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Barriers to implement Electronic Health Records (EHRs)

Sima Ajami, Razieh Arab-Chadegani
Department of Health Information Technology, Health Management & Economics Research Center, School of Medical Management and Information Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

Corresponding author: Razieh Arab-Chadegani. School of Medical Management and Information Sciences, Isfahan University of Medical Sciences, Isfahan, Iran. arab.razieh@yahoo.com

ABSTRACT

Introduction: During the past 20 years, with huge advances in information technology and particularly in the areas of health, various forms of electronic records have been studied, analyzed, designed or implemented. An Electronic Health Records (EHRs) is defined as digitally stored healthcare information throughout an individual's lifetime with the purpose of supporting continuity of care, education, and research. The EHRs may include such things as observations, laboratory tests, medical images, treatments, therapies; drugs administered, patient identifying information, legal permissions, and so on. Despite of the potential benefits of electronic health records, implement of this project facing with barriers and restriction ,that the most of these limitations are cost constraints, technical limitations, standardization limits, attitudinal constraints–behavior of individuals and organizational constraints. **Aim:** The aim of this study was to express the main barriers to implement EHRs. **Methods:** This study was unsystematic-review study. The literature was searched on main barriers to implement EHRs with the help of library, books, conference proceedings, data bank, and also searches engines available at Google, Google scholar. For our searches, we employed the following keywords and their combinations: Electronic health record, implement, obstacle, and information technology in the searching areas of title, keywords, abstract, and full text. **Results and discussion:** In this study, more than 43 articles and reports were collected and 32 of them were selected based on their relevancy. Many studies indicate that the most important factor than other limitations to implement the EHR are resistance to change.
Key words: Electronic Health Records, implement, barrier, technology.

1. INTRODUCTION

During the past 20 years, with huge advances in information technology and particularly in the areas of health, various forms of electronic records have been discussed, designed or implemented (1).

Electronic Health Records (EHRs) are defined as digitally stored healthcare information throughout an individual's lifetime with the purpose of supporting continuity of care, education, and research. The EHRs may include such things as; observations, laboratory tests, medical images, treatments, therapies, drugs administered, patient identifying information, legal permissions, and so on. With the growing emphasis on providing the right information to the right person anywhere at any time in today's globally interconnected world, the U.S. healthcare industry has been moving toward the EHRs system. It has become obvious that the paper record system is incapable of supplying caregivers with all the patient information they need in a way that they can utilize it. This problem, as well as concerns for better quality and reduced costs, is being realized more and more. Studies report that the EHRs systems could save billions of dollars; in fact, one such study indicated the systems could save up to $81 billion in healthcare costs annually, as well as improve healthcare quality (2). This may be due to lack of significant return on investment (ROI) in the short-term, considering the high costs associated with the adoption of the EHRs systems. In an article published in Mathematical Policy Research, Inc., Lorenzo Moreno noted that, "Although the EHRs have the potential to improve quality of care, reduce medical errors, and lower administrative costs, incorporating them into clinical practice will require large investments in technology, in addition to changes in existing systems and processes (4).

Health information technology professionals and governmental leaders are promoting the EHRs. David Brailer emphasized that the important role that EHR systems play in improving quality, increasing patient safety, increasing operational efficiency, and reducing costs (5).

President Bush announced that most Americans will have the EHRs within the next 10 years to allow doctors and hospitals to share patient records nationwide (6).

Many organizations are working to develop initiatives and goals to help meet the needs of the healthcare industry. Some of these include: (1) the Electronic Health Information

Management (e-HIM) initiative by the American Health Information Management Association; (2) the charge to the Office of the National Coordinator for Health Information Technology, by the U.S. Department of Health and Human Services (DHHS), to move the EHRs into clinical practice; and (3) the charge by the DHHS to an Institute of Medicine committee to identify basic functions of the EHRs systems (4, 7). The core functions of an EHR system and its components as identified by the Institute of Medicine (IOM) committee were health information and data, results management, order entry/management, decision support, electronic communication and connectivity, patient support, administrative processes, and reporting and population health management (7).

2. METHODS

This study was a nonsystematic review. The literature was searched on main barriers to implementing the EHRs with the help of libraries, books, conference proceedings, data bank, and also search engines available at Google, Google scholar. In our searches, we employed the following keywords and their combinations: Electronic health records, implement, obstacle, and information technology in the searching areas of title, keywords, abstract, and full text. Technical reports were excluded since we focus on research papers. In this study, more than 43 articles were collected and assessed 32 of them were selected based on their relevancy. By analyzing our collected literature, we identified the main barriers of EHR adoption in healthcare. These implications can be used to guide future research in this field.

3. RESULTS

A recent study, conducted in 2006 by the Healthcare Financial Management Association (HFMA), surveyed senior healthcare finance executives at hospitals and health systems of various sizes and regions. The purpose was to identify how healthcare financial executives view the barriers to the EHRs adoption and the actions government can take to encourage adoption. Based on the 176 responses, the functions in which the greatest number of hospitals reported significant progress were order entry (38 percent), results management (27 percent), and electronic health information/data capture (23 percent). The most significant barriers were lack of national information standards and code sets (62 percent), lack of available funding (59 percent), concern about physician (51 percent), and lack of interoperability (50 percent) (8).

The major barrier to adoption of the EHRs system, as identified by some studies, was a misalignment of cost and benefits or financial reimbursement (9, 10).

Other barriers that have been identified are technical issues, system interoperability, concerns about privacy and confidentiality, lack of health information data standards, lack of a well-trained clinician informatics workforce to lead the process, the number of vendors in the marketplace, and the transience of vendors (9, 10, 11).

A study was conducted in 2004 by Healthcare Informatics in collaboration with American Health Information Management Association (AHIMA) showed the industry is continuing to see more movement toward the EHRs. For example, when organizations were asked to describe their progress toward the EHRs, 17 percent of respondents indicated they were extensively implemented; 26 percent indicated they were partially implemented; 27 percent said they were selecting, planning, or minimally implemented, and 21 percent indicated they were considering implementation and gathering information about it (12).

In a study conducted during the summer of 2004 by the American Academy of Family Physicians (AAFP), nearly 40 percent of respondents, who were members of AAFP, indicated they either had completely converted to EHRs or were in the process of doing so (13).

Previous research on the risks of the EHRs systems identified privacy and security as major concerns (9, 10, 14). Other risks identified were financial risk (billing errors in the software), software systems becoming obsolete, software vendors going out of business, computer crashes, data capture anomalies, programming errors, automated process issues, and populating invalid information in the decision support system module of the EHRs systems (3, 15). Some of the main benefits of the EHRs systems that have been identified include reducing medical errors, improving quality of care, conserving physician time, sharing patient information among healthcare practitioners, and workflow efficiency (16, 17).

Acceptance of any information system needs to correct planning and change management. Electronic health readiness assessment, performed prior to implementation, is considered as an essential process (18, 19).

Research shows that Limits of attitude-behavior of individuals or resistance to changes are more important factor than other limitations (20, 21).

In a study in the United States of America on the selection and successful implementation of electronic health records in small ambulatory practice setting perform shows that the EHRs implementation experience depends on a variety of factors including the technology, training, leadership, the change management process, and the individual character of each ambulatory practice environment (22).

Several obstacles have been cited as explanations why the EHRs have not achieved more prevalent usage in physicians' offices. These obstacles include:

- The EHRs products are expensive and require a major investment;
- The EHRs applications are not standardized;
- The EHRs are more difficult to use than paper-based records;
- The EHRs implementation reduces practice productivity and disturbs workflow (at least initially);
- The EHRs benefits accrue to others (such as society and payers) not to providers.

A study by Gans et al. confirmed that the top barriers that physicians list is the cost of the systems, clinicians' concerns about technically supporting a system, and the clinicians' ability to use the new system (23). Baron et al., in describing the lessons learned by the Greenhouse Internists group in implementing the EHRs system, stated, "It is naïve to assume that small practices will move to the EHRs without a variety of support, one of which is certainly financing. Enhanced reimbursement models will be needed

for wider adoption." (24).

Simon et al. conducted a survey of a stratified random sample of 1,829 office practices in Massachusetts in 2005. The survey measured use of health information technology, plans for the EHRs adoption and barriers to adoption as perceived by the practices. Simon found that in Massachusetts, less than 1 in 5 practices use the EHRs and that even among adopters there was considerable variation in use by functionality and across practices. Many practices do not use the EHRs functions needed to improve healthcare quality and patient safety (25).

Today is the information age and the explosion of information technology has transformed every area of life and work (26). Enough information is valuable and it must be well documented, maintained, retrieved and analyzed. In health management systems, information has a special role in planning, evaluation, training, legal aspects and research (27).

In fact, the first distinction between developed and developing countries, are the production, application and utilization of information (28, 29, 30, 31).

So, with the advent of information technology in health care, moving toward a new paradigm such as electronic health record has also begun. In this paradigm, Information is immediately accessible and electronic health record can also provide medical alerts and reminders. At first, it may be so expensive but it will save costs in the long term (32).

4. CONCLUSION

Despite of the potential benefits of electronic health records, implement of this technology facing with barriers and restrictions, which the most of these are; cost constraints, technical limitations, standardization limits, attitudinal constraints-behavior of individuals, and organizational constraints. Many studies indicate that the more important factor than other limitations to implement the EHR are resistance to change.

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