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CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1.	**ELECTRONIC HEALTH RECORD SYSTEM - BENEFITS AND CHALLENGES: A LITERATURE REVIEW** *SHEETAL JOHAR & Dr. BASANNA PATAGUNDI*	1
2.	**OMNICHANNEL RETAILING: IMPACT OF FACEBOOK ON RETAIL BUSINESS DYNAMICS** *MUGESHKANNAN REGURAMAN, Dr. S. GANAPATHY & A. THANGAM*	4
3.	**ROLE OF TOURISM IN SUSTAINABLE DEVELOPMENT & WELL BEING OF SOCIETY** *CHIKAI GHOSH*	9
4.	**THE IMPACT OF DIGITIZATION IN FUTURE VISION** *Dr. R. LEELAVATHY*	16
5.	**REGIONAL VARIATIONS IN LITERACY RATES - A PROFILE OF ANDHRA PRADESH** *K. MAHESWARA RAO*	19
6.	**CUSTOMER SATISFACTION WITH LIFE INSURANCE COMPANY: A CASE STUDY OF SHIMLA DISTRICT OF HIMACHAL PRADESH** *NIVEDITA & Dr. RASHMI CHAUDHARY*	22
7.	**MARKETING STRATEGIES OF DAIRY CO-OPERATIVE SOCIETIES IN KERALA: WITH SPECIAL REFERENCE TO MILMA ERNAKULAM DISTRICT** *EAPEN RAJU & Dr. PRAKASH C*	27
8.	**FINANCING SMALL AND MEDIUM SCALE ENTERPRISES BY MICROFINANCE BANKS IN SOKOTO STATE, NIGERIA** *Dr. MUSTAPHA NAMAKKA TUKUR & ABDULRAHMAN BALA SANI*	31
9.	**THE DYNAMICS RETURN OF CLEAN AND RENEWABLE ENERGY SECTOR AND ITS RESPONSE ON THE BUSINESS CYCLE AFTER THE KYOTO PROTOCOL** *BAGUS SUNDORO, NOER AZAM ACHSANI & Dr. TONY IRAWAN*	36
10.	**DIGITAL FINANCE: A CATALYST TO FINANCIAL SERVICES** *ANUBHUTI*	42
	REQUEST FOR FEEDBACK & DISCLAIMER	44

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ELECTRONIC HEALTH RECORD SYSTEM - BENEFITS AND CHALLENGES: A LITERATURE REVIEW

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ABSTRACT

Health care sector in India is widely under public and private sector. There has been lot of improvement in this area ever since after India gained Independence. Medical treatment, equipment, technology, Information system, rules, regulations and many others areas connected to healthcare have seen a lot of change. In this paper, we would like to bring out the review on literature available with regard to Health Information Systems (HIS). Lot of literature is available in this area in different aspects. The articles were mainly categorized based on the relevant area that were discussed in the article. The wide categories were Articles, which discussed more on benefits, challenges, obstacles during the process of implementation.

KEYWORDS

health information systems, electronic medical record, electronic health record.

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INTRODUCTION

The Circular on Electronic Health Record by Ministry of Health and Family Welfare says Electronic health records can improve care by enabling functions that paper medical records cannot deliver:

- EHRs can make a patient's health information available when and where it is needed – too often care has to wait because the chart is in one place and needed in another. EHRs enable clinicians secure access to information needed to support high quality and efficient care.
- EHRs can bring a patient's total health information together to support better health care decisions, and more coordinated care.
- EHRs can support better follow-up information for patients – for example, after a clinical visit or hospital stay, instructions and information for the patient can be effortlessly provided and reminders for other follow-up care can be sent easily or even automatically to the patient.
- EHRs can improve patient and provider convenience – patients can have their prescriptions ordered and ready even before they leave the provider's office, and insurance claims can be filed immediately from the provider's office.

OBJECTIVES OF STUDY

The objective of the study is to review literature from across the world on Electronic Health Records with respect to its benefits and challenges.

RESEARCH METHODOLOGY

More than 200 literature on Electronic Health Records has been reviewed and then about 75 of them critically reviewed. Amongst these about 35 were found to specifically mention about the benefits and challenges faced in implementing EHRs.

BENEFITS AND CHALLENGES OF USING EHRs

There are of course many problems faced during the process of using the electronic health record systems (EHRS), but the benefits outweigh them and hence justifying their use.(Cortes et all 2011). Their study showed the benefits were standardization of processes, ease and agility in recovery of information, the control over prescriptions, materials and procedures was better. Also there was better adherence to standards established by the hospitals. Research finds that applications that provide online access to personal records were more beneficial to chronic patients.(Kim & Johnson, 2002). It was also found that patients desired greater integration of medical records(Winkelman et.al, 2005).Patients desired integrated records which could help them to review laboratory results and also the prescription along with the important statistics and a chart history. This included a study on various applications provided by vendors and also understanding the varied platforms and functionalities (klein et.al, 2007).

The direct engagement of patients was a meaningful use of EHRs. The EHRs empower the patients and support care between their visits. The study suggested that there should be payment providers at national level so that it would support all modes of access across various insurers.(Ralston et.al,2010). EHRs can eliminate of tons of paper records and also x-ray films. They could reduce the in-person visits for simpler problems. There could be reduction in paper use, transportation fuel, water consumption and also some toxic chemicals, these could in turn help in reducing the environmental footprint.(Turley et.al, 2011).Burrows & Ashley(2014) in their research found that although there were many benefits of EHRs in comparison to paper records, like paper records would get old, soiled or spoilt with water, termites or fire , but still there was only partial adoption of EHRs. The goal was to have EMRs accessible across the country and for this, there was a great need of interoperability and technical and policy conformance among various networks. It also required change in cultural and behavioral actions on part of providers. The capital required was also huge. Inspite of all these obstacles the benefits found in adopting EMRs is huge. The clinicians for acute care spent significant time documenting the patient care information in EHRs.(Peneyer et.al 2014). They found in their study that this was important because the nurses accessed this information more often along with the practitioners because they made continuous decisions for the patient based on these records. These records were continuously updated by the nurses and clinical practitioners. They also found there was limited awareness about the use of components of EHR available to them. The researchers felt there was a need to study further into the effects of streamlining EHR components with its use for clinicians and strategies that would help to improve the end users' experience with the system.

Knowing the large benefits of EHR, there has been adoption of it to quite an extent but interoperability is yet to be achieved and that requires technical and policy conformance among networks. (Burrows, Ashley, 2014). Investments are huge and would take at least three years to get returns and of course, the patients will have to pay for this superior service. Since EHRs are digital records which store complete medical history of patients it is important that there is proper security so

that no can misuse this data. Best practices need to be followed so that medical errors can be reduced, proper and efficient technologies to be implemented so as to provide quality health care to patients and the system more efficient. (Jaymeen Shah et.al 2014). Business value is enhanced when the consequences of implementing EHR result with interplay of technological, organizational and human dimensions. This showed that the way IT is adopted is also very important(Ben-Zion et.al 2014). A passionate and highly committed team can make a lot of difference. Various stakeholders have different levels of expectations, the passion of developers and need and expectation of clients and various levels of resistance are all to be considered.(Craig et.al 2015). Patient safety is very important and EHRs are used continuously for providing treatment also support is taken from software sometimes for decision making in treatment and hence there cannot be any errors in EHRs, making patient safety as most important.(Muhammad Zia et.al 2015). The initial investment on EHRs seem to be very high but then its benefits are large and it leads to savings after some period.(Freymann et.al 2014).Friedman et.al ,2013 found that even in countries where the penetration of EHRs was higher needed practical considerations as only limited success was achieved. It needed support from the population as well as the political support as it is a national effort of the medical institutions.

It was found in a study that private practitioners felt there should be better human technology interaction and hence system developers should take care of this aspect during design and development. It was found that to avoid negative consequences of implementation of EMR sharing, it should be designed with meeting the specific needs , capabilities and limitations of end users and the key aspects it is intended to support(Dr Calvin et.al, 2014).

Arya (2015) found in his study that it was time for information to be fed only once into the system electronically and this should be available at all times during the care. The reports should not have any redundant information in them. Reports should be available as when required by doctors during the care and only the information needed should be available and not the entire information. There should be provision to import the data and format it in a manner as required by the end user. Sunyaev Ali (2014) in his review on literature found four areas in health care systems , first discussed about basic conditions that are essential to make consumer healthcare services attractive for the stakeholders involved. The second was to identify systems, which could supply patients with information and recommendations helping to improve the current situation. The third was represented by devices enabling consumer health care to operate pervasively in a manner that the benefit for the patients is maximised and expenses could be lowered. The fourth stream was maintaining personal health records, which permit the storage, and organizing the personal health records with the help of third parties. This research found high potential for consumer health care services, which provide secure, easy to use services, which supply patients with health information. The records also increase he possibilities of interconnectivity.

Despite the advantages of EMR, the adoption rate is still low; there is less acceptance by the physicians. Parvin et.al (2014) in their study felt that there is a need to accelerate the use of EMRs and for this it needed educational campaigns to demonstrate the advantages of EMRs and further improve the physicians perceptions of EMRs. EMRs can have a positive impact on patient safety, for this, the physicians must be able to use the systems effectively after they are being made available to them. (Callan et.al 2007) It is a common thing that is found in general, resistance to change. Moving on from paper based record system to EHR also faced resistance. The study found that it was important to involve the staff, give them proper training and educate them and support them to practice using it. Lot of investigation has to be done before selecting a vendor and then realistic budget has to be prepared for the entire implementation process. Since the investment is huge, proper funding should be arranged. There should be a proper curriculum framed and courses for students to have a career in Health Information Technology (HIT)(Chi Zang et.al 2014). Well-educated HIT professionals will find employment in this area and they will be required to help the nation grow in healthcare sector.

Kersten Sandra (2013) brought out the importance of information Governance in electronic health record optimization. It was found that Hawaii Pacific Health recognized the value of information as an important resource for quality care. It was found that an information governance program was very critical for maximizing EHR and other information systems to get accurate and actionable data, which would help the organization to achieve much more improved care delivery and also save costs. Engaging various critical owners like the clinical, legal, compliance, IT, finance and others involved would ensure success. Kothapeta et.al (2014) conducted a study on the workforce requirements in hospitals to implement EHRs. They studied the relationship between the size of the hospital and the IT hiring. They found the small size hospitals spent a lot more on IT when compared to the large hospitals. The IT budget and the outsourcing budget was not clear. They felt there should be further study on hospital mergers and the effect on them by comparing IT before merger and after merger. They also felt the need for further study to find the ideal size for all departments including healthcare information technology workforce in hospitals and the need to train and educate the workforce.

Latha Anju (2012) in her study found that even though there are benefits of EHR, there were barriers in its successful implementation in India. To list a few being, cost, leadership, vendors, deficits in public policy, keeping up user needs, standard security and true definition. She focused mainly on Integrated Electronic Health Record System research and implementation of it for maintaining a health card. It was found that this would reduce medical errors and provide a link to medical knowledge and decision support system. Various meters such blood pressure meter, pulse oxymeter, glucose oxymeter, can be used which can store the reading electronically which could be transferred to the computer and then to the health card. Chunn Vance (2011) in his study found that despite the advantages of EHRs in the past it was largely driven by practice and physician characteristics. The incentives associated with adopting EHRs were largely internal to the practitioner or organization. The initial costs for software, hardware and training were huge and that apart an incentive was a great booster to adopt EHRs. The adoption and use of EHR seemed to grow longitudinally and there was need to further study about longitudinal growth and interoperability.

Glasgow, Russell et.al (2012) in their study found that there is a need to involve patients in EHRs and also to include patient reported information such as their preferences, health behavior and psychosocial functioning. Patients, practitioners and policy makers should be able to understand the measures and take actions based on them. They found a chief obstacle in this implementation as political will. Standardizing psychosocial items and practical behavior and including them in EHRs can improve human care and enhance patient-provider relationship and hence develop better information for addressing problems in medical care. Ntsako Fikile(2013) in his study showed the need to implement EHRs in state owned hospitals in South Africa as there were no EHR system found and hence further to facilitate e-referal system to improve health care delivery.

Maria Cucciniello (2011) aimed at making an in depth investigation to evaluate the effects of EMRs by comparing the two study settings which implemented the same EMR system produced by the same provider. Key issues arising at these two hospitals were studied. This study offered to practitioners, policy makers a better basis of analysing ICT (Information and Communication. Kathrin M.Cresswell (2012) studied about the consequences faced by users of new technology involving electronic health record. Due to the complex processes involved in implementing and adopting new technology there were changes in organisational functioning and work practices. She took up this study in English health care setting about national implementation of electronic health records and one of the procured systems was Lorenzo. She conceptualised her study in form of case studies. She applied a theoretical framework to explore sociotechnical processes involved in the implementation and adoption of Lorenzo. It was found that most importantly; national implementations need to build on a solid basis of local technology adoption by allocating sufficient time for individual users and organisations to adjust to the complex changes that often accompany such service redesign initiatives.

Viginia, Craig, Mihir and James Courtney (May 2009) in their study examined the physicians' response to the electronic medical records (EMRs). The physical accessibility and the logical feasibility of use of EMRs was studied. They found many a times the physicians did not have the physical access to the EMRs and many a times they had access but felt it is better to spend more time on the patient rather than update the data in EMR. This study found mainly accessibility, be it physical or logical to be the mains barriers and had indirect effect on physicians' perceptions of EMR usefulness and ease of use. Urvashi Sharma (2011) included a case study involved in deployment of EHRs in U.S and investigated the challenges facing e-health. The various issues were patient data security, organization support, user-friendly systems; policies to implement are a few amongst them.

CONCLUSION

It was found from the literature that Electronic health records had many advantages like eliminating paper records , lesser errors in entering information, less time consuming to retrieve patient records, helped in better care delivery, helped patients to retrieve their records, lab test results etc online, reduced cost. There was improved patient-physician interaction online and better understanding resulting in better care delivery. Though there are many advantages, it has its own challenges in implementation and use. Due to high initial investment many health care centers with lesser beds found it difficult to implement, as the return on

investment would take too long when compared to large hospitals. Other challenges were to train the staff, nurses and doctors and encourage them to use electronic record system. It is also a challenge to maintain the security of patient records and not allow any misuse of the available information.

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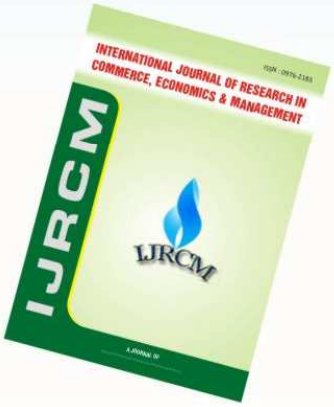
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