

A STUDY ON ELECTRONIC MEDICAL RECORD SYSTEM FOR CLINICAL DATA STORAGE IN THE SELECTED HOSPITALS

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Abstract- A medical record is a detailed record of a patient kept by hospitals and organizations. It contains medical history, treatment, tests results, diagnosis, prescription etc. An EMR system helps physicians and hospitals function in a smoother, safer, and more secure manner, allowing hospital personnel to retrieve and update the information of any patient with a click of a button. The doctors and administration can then concentrate more on the patient's problem than on the patient's records and administrative tasks.

Keywords- Doctors, EMR, Hospitals, Patient, Record.

I. INTRODUCTION

Role of ICT in healthcare has increased year after year. Doctors in the hospitals used to take down notes of patient's medical history on the letter heads. It was time consuming also there was a problem to store the records for long term and there was no security to records.

EMR has emerged to be one of the new technologies which will help hospitals and doctors to keep track of patient's medical record. Electronic Medical Record EMR is storing of patient medical record in a digital format so that it can be accessed and shared from anywhere irrespective of location in case of emergencies and provide point of care to patient's.

EMR system should have following:

1. High quality treatment.
2. Appointment schedule.
3. Reduced Time.
4. Cost reduction in treatment.
5. Effective Communication.
6. Laboratory Integration
7. Pharmacy Linkage.
8. Administrative .
9. Reports.
10. Alerts.
11. Decision Support.

II. REVIEW OF LITERATURE

1) Making the switch to an electronic medical records system will help to bring forth health care advances with the systems data quality and availability. This research study uses focus groups and surveys to get the opinions of different health care providers and some patients on what they think EMR will do for the health care industry. Literature related

to EMR was reviewed to get a better understanding of the benefits and barriers of electronic medical records. The study uses data from two health care facilities for 4 new patients in the traditional paper-based medical records system followed by the new electronic medical records system. Data entry times were recorded for both systems as well as the accuracy of delivery and transferring of information between facilities. The results show that the EMR system provides a faster data entry time than the paper-based method. Results also show that the transferring of information between facilities provides a safer and convenient way to treat patients. The results helped to develop a plan to implement EMR in our rising health care industry.

2) To examine the impact of billing and clinical data extracted from an electronic medical record system on the calculation of an adverse drug event (ADE) quality measure approved for use in The Joint Commission's ORYX program, a mandatory national hospital quality reporting system. More detailed clinical information may result in quality measures that are not comparable across institutions due institution-specific workflow, differences that are exposed using EMR-derived data.

3) Information technology is proving to be a vital element in the administration of healthcare. Specifically, most healthcare institutions in the United States are adopting information systems that provide more accurate and timely information regarding patient care. This paper explores the implementation of an electronic medical record system at St. Jude Children's Research Hospital in Memphis, Tennessee. St. Jude Hospital is primarily dedicated to the treatment of children with catastrophic illnesses and the performance of research studies to improve the clinical outcomes of such diseases. Appropriate patient care requires the use of clinical procedures as well as applied research protocols. Information must be accurate and immediately available to individuals

involved in the care of patients. An electronic medical record system was introduced as a way to facilitate a centralized patient information repository. Benefits realized by this system included improvements in patient care, clinical research, and patient service and satisfaction. The ultimate goal of this project was to provide a paperless patient medical record that linked research and clinical data.

III. OBJECTIVE OF STUDY

- To study the basic concept of EMR.
- To identify the benefits of EMR in Healthcare centers.
- To study the awareness of healthcare centers towards EMR.
- To study the views of Physician towards EMR

IV. METHODOLGY OF STUDY

Selection of Hospitals is done by lottery method .25 hospitals are selected on the basis of criteria that hospitals are using automation system or are in implementation phase. Large, medium Hospitals or clinics with single speciality, multi speciality with facilities are selected.

V. HYPOTHESIS OF THE STUDY

- Performance and usage of EMR in healthcare centers are constantly increasing year after year.
- EMR increases efficiency at healthcare centers

VI. TESTING OF HYPOTHESIS

The chi-square test is used to determine whether there is a significant difference between the expected frequencies and the observed frequencies in one or more categories.

1. THE Performance of EMR- System at the Healthcare centers with usages of EMR-Systems.

Table No1.1
Observed Frequency (fo)

Usages of EMR	Performances of EMR-System in Healthcare centers			Total
	Lower(1)	Medium(2)	Higher(3)	
Yes (1)	1	9	5	15
No (0)	5	4	1	10
Total	6	13	6	25

Table No1.2
Expected Frequency (fe)

Usages of EMR	Performances of EMR-System in Healthcare centers			Total
	Lower(1)	Medium(2)	Higher(3)	
Yes (1)	3.6	7.8	3.6	15
No (0)	2.4	5.2	2.4	10
Total	6	13	6	25

Yes (1)	3.6	7.8	3.6	15
No (0)	2.4	5.2	2.4	10
Total	6	13	6	25

Table No1.3
CHI-SQUARE TEST TABLE

Observed Frequency(fo)	Expected Frequency(fe)	(fo-fe)^2/fe
1	3.6	1.8778
5	2.4	2.8167
9	7.8	0.1846
4	5.2	0.2769
5	3.6	0.5444
1	2.4	0.8167
Total		6.5171
CHI-SQUARE VALUE		6.5171

DATA ANALYSIS FOR CHI-SQUARE

Level of significance alpha=	0.05
Degree of freedom =	2
The critical value of Chi-sq=	5.9915

1.1 Null Hypothesis (H0)

The performance and Usage of EMR -system in the Healthcare centre are independent.

CONCLUSION

From Table No1.3

The calculated value of chi-square is greater than the critical value of chi-square;

Hence there is reason to reject the Null Hypothesis at the 5% level of significance. It is concluded that the performance and Usage of EMR - system are significantly dependent;

2. The satisfaction with EMR –system increasing efficiency and Reliability of Hospital Management or Healthcare centers.

Table No2.1
Observed frequency (fo)

Prompts (efficiently) taking care of patients condition	The satisfaction with EMR-System & reliability of hospital management or healthcare centers.		Total
	Better	Best	
Yes (1)	13	07	20
No (0)	03	02	05
Total	16	09	25

Table No2.2
Expected frequency (fe)

Prompts (efficiently)taking care of patients condition	The satisfaction with EMR-System & reliability of hospital management or healthcare centers.		Total 1
	Better	Best	
Yes (1)	12.8	7.2	20
No (0)	3.2	1.8	05
Total	16	09	25

Table No2.3
CHI-SQUARE TEST TABLE

Observed Frequency(fo)	Expected Frequency(fe)	(fo-fe) ² /fe
13	12.8	0.0031
3	3.2	0.0125
7	7.2	0.0056
2	1.8	0.0222
CHI-SQUARE VALUE		0.0434

DATA ANALYSIS FOR CHI-SQUARE

Level of significance alpha=	0.05
Degree of freedom =	1
The critical value of Chi-sq=	3.841 5

2. NULL HYPOTHESIS (H0)

The increase in Efficiency of EMR-system and the Hospital Management or Healthcare centers are not significantly dependent.

CONCLUSION

From Table No2.3

The calculated value of Chi-square is less than the critical value of chi-square at 5% level of significance, the Ho is true; there is reason to accept null Hypothesis .The increase in Efficiency of EMR-system and the Healthcare centers are not significantly dependent.

VII. FINDINGS AND SUGGESTIONS

1. EMR system usage reduces paperwork.
2. EMR system is reliable
3. Sharing of information through use of EMR system.
4. EMR system is used at the time of Check up during their practices.

5. Doctors & staff from government healthcare centers are having the knowledge of EMR system.
6. Majority of doctors & staff are of opinion that EMR system affect care of patients.
7. Majority of Doctors & staff opined about having trained IT staff at hospitals.
8. Use of EMR system will benefit healthcare centers & patients.
9. Majority of staff opined that they do not use patient demography which helps to give required data & have references at the time of treatment to the patients.
10. The Opinion about doctors & staff about application of EMR system and satisfaction along with reliability is satisfied.
11. The Opinion about doctors & staff about application of EMR system and satisfaction for sharing medical information will be easily applied for healthcare.
12. The majority of doctors & staff do not use medication history.
13. The majority of doctors & staff do not use laboratory reports through EMR.
14. The EMR system must be efficiently used by all stakeholders for better and quick decisions about patients treatment.
15. Applications of EMR system at the time of patients check up must be made available for correct and fast treatment.
16. The EMR system must be used for sharing patients records at every healthcare centers.
17. The use of EMR system will aid in for paperless technology.
18. EMR system for patients care with scanned reports will provide fast access to records & reduce environment pollution.
19. EMR system with acceptance and implementation according to communication with patient will provide proper medication and fast results.
20. Data generated by EMR system can be used for further research.
21. EMR avoids medical errors in the prescription process.
22. Small health centers must look to manage services of EMR.
23. Healthcare centers needs to have trained IT staff.

CONCLUSION

Electronic medical record systems lie at the center of any computerized health information system. Evidence has increasingly shown that current systems are not delivering sufficiently safe, high quality, efficient and cost effective healthcare. From the survey it is observed that there is increase in use of EMR and

it is helping all stakeholders for improving patient's care. Main concern is the consistent use of standards, security, confidentiality and access rights to EMR, data quality and interoperability.

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