iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** IV **Month of publication:** April 2020

DOI:

www.ijraset.com

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IV Apr 2020- Available at www.ijraset.com

Electronic Health Record System

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Abstract: ***Electronic Health Record (EHR) is the record of the patient's medical history which stays with the patient, it includes checkups, appointments, illness and medication. Though in some literature EMR and EHR are taken as same. Electronic Medical Record (EMR) is a record of patient's medical and treatment history from one practice, it stays with the doctor of that practice and if the patient switches the doctor then this record stays with the doctor.***
Keywords: HER, EMR, prescriptions, doctor, record, health

I. INTRODUCTION

With the increasing number of people prone to new diseases, viruses, accidents and allergies we are now seeing a surge in the number of patients in hospitals and clinics. Most of us are not familiar with the medical field which creates a hindrance for the doctor to completely understand the patient and provide the right medication and treatment. This forces the doctor to ask the patients to try the following medication and visit again if that doesn't work or to have some tests again if the patient has lost the previous test reports. All this results in multiple appointments ,multiple check-ups and due to the stacked hospitals and clinics long waiting hours. In this fast paced world we live in ,a world where everything we need is one click away. We are in need of a system which makes our medical field faster than ever. EHR provides an easy way to keep all the records of patient in one place without any hustle and everything will be one click away. EHR keeps a record of patient's medical history which includes appointments, medication, reports , allergies etc.

EHR will make the doctor's task easy as it will make all the medical history of the patient available to him. This way the doctor looking at the present situation of the patient and based on his medical record could provide him with an optimum treatment. This will make the check-ups faster and the patient will have to attend less. It would also help the doctor to check if the patient is suffering from a serious illness which he could not have conveyed properly. Most of the high end hospitals do use the EMR but that only contains the details of the patient information and his problem with certain records and services related to that specific hospital. These are not shared with any other hospital or clinic and the patient too would not have access to it. The EHR is accessible to the patient and any doctor could access it with the patient's consent.

II. LITERATURE REVIEW

A. The EHR will be the central database of information for billing, clinical decision support and quality.[4]
B. The quality of data provided by EHR gives health care providers the information in formats that were not possible with paper charts.[2]
C. The EHR can improve healthcare efficiency and productivity.[1]
D. A total of 10.9% of US Hospitals are using a basic EHR and a total of 98.5% hospitals are in process of implementing EHR along with UK, Denmark and Sweden.[5]
E. The following graph is a result of a small scale analysis of the concept in real life judging on the basis of two factors- Facilitators and Barriers showing the prior dominating the second.[1]

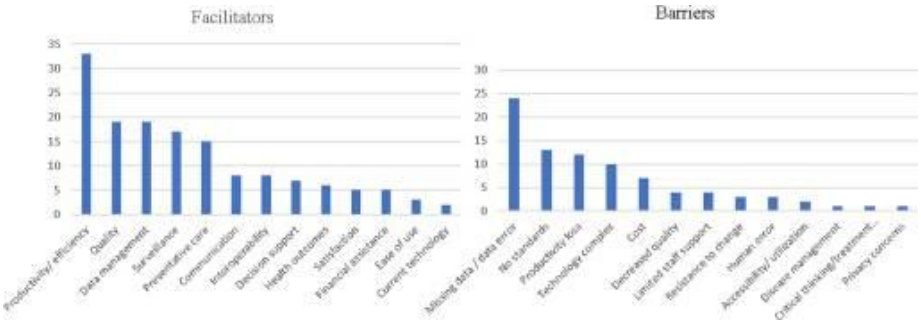

Fig.1. Graphical statistics of analysis

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III. INFERENCE FROM LITERATURE

The currently used paper prescription methods have the following shortcomings:

A. The personnel are spending more time looking for information than they would spend on health care delivery.[7]

B. The table shows the types of missing information and its frequency. According to the President's Information Technology Advisory Committee, 20% of laboratory tests are re-ordered because previous studies are not accessible.[6]

Information Missing During Patient Visits	% Visits
Lab results	45%
Letters/dictations	39%
Radiology results	28%
History and physical exams	27%
Pathology results	15%

Table 1. Missing of Information

IV. PROPOSED ARCHITECTURE OF THE SYSTEM:

The system of EHR will be accessible through a website as well as a mobile application. The data will be stored on an online database. The website will enhance platform independence, ease of usability and ease of access making it easily accessible to whoever wants and wherever he/she wants it without installation of any software . The website is for the medical personel while the app is for the patient. The patient's details will be accessible to doctor via a specific id and otp making it secure. The website and the mobile are connected to the online database which keeps all the data secure and can be accessed anywhere making it transferable without any hustle. The profiles can be edited and updated only by the medical personnel registered on the website. They can only upload prescriptions, bills, treatment measures explained by the doctor and reports which is then uploaded to the database and added to the patient's profile. This could be then viewed on the phone and any other pc with the patient's consent.

A. The Website

The website is structured and synchronised in a way that everyone would understand and find any information easily. The website is for the doctors, hospital staff and pharmacists and they need to be registered so that they could login to the website and edit or update the record. The website runs in two tabs after login, one is for viewing the record and the other is for updating. It has every option well defined and most of the options are prebuild so that minimum typing is required and the workflow is smooth and fast.

The website will have features like:

1) The hospital/clinic staff can add the details for the current appointment.

2) The reading tab for the doctor to see the patient's health record.

3) The doctor can add new prescription and practices for the current problem.

4) The staff can also add the reports,xrays and test results or add the column for the tests suggested by the doctor which could be added later on when the test results come.

5) The patient can show the prescribed medicines to any pharmacist anywhere.

6) Those pharmacists update the record with the new midicines and the bills.

7) The doctor while adding the medicines can also add the time for taking the medicine like before bed or after breakfast and what quantity .

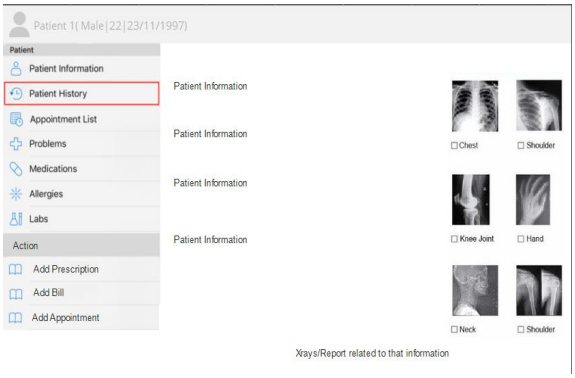

Fig. 2. Prototype of the Website

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B. The Mobile Application

The mobile application is built for the patients to have a look at the reports or the doctor's prescriptions. The app is built for ease of use by the patients so that even an elderly can use the app and use it accordingly.

The app consists of:

1) The full health record
2) A tab for the current medicines and practices added by the doctor.
3) These will be highlighted with alerts to take medicines as described by the doctor and a checklist to do the practices
4) The details of the nearest pharmacies, hospitals and clinics.
5) Appointment time, Appointment Delay alert and Test result report alerts.

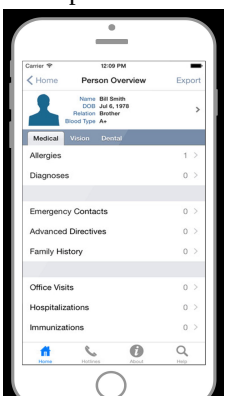

Fig. 3. Prototype of mobile application

V. ADVANTAGES OF EHR

EHR gives the ability to share the information electronically and provide higher quality and safer care for patients while crating tangible enhancements for an organization. On top of that there are many benefits related to it:

A. It saves time and money for sharing of medical information in paper and also saves storage space making it less vulnerable to getting destroyed or lost.
B. It proves accurate, up-to-date and complete information about patient to the doctor.
C. It enables streamlined billing and saving of information with accuracy.
D. It reduces costs through decreased paperwork, improved safety, reduced duplication of testing and improved health.

VI. CONCLUSION

This system is very simple and easy to use. It proves to be a beneficial move in the medical department. The concept has been in a rise for the past few years and with global conditions worsening we are seeing a surge of patients in the hospital and a vast majority of them being regular check-up of a chronic disease. So for these patients this is very necessary as these patients suffer the most in sharing of medical documents and conveying the right information to the doctor. The advantages of the system clearly outnumbers it disadvantages of introducing this new system to a vast number of people as it will create a completely new domain and it would create employment to people in which the only skill required would be typing.

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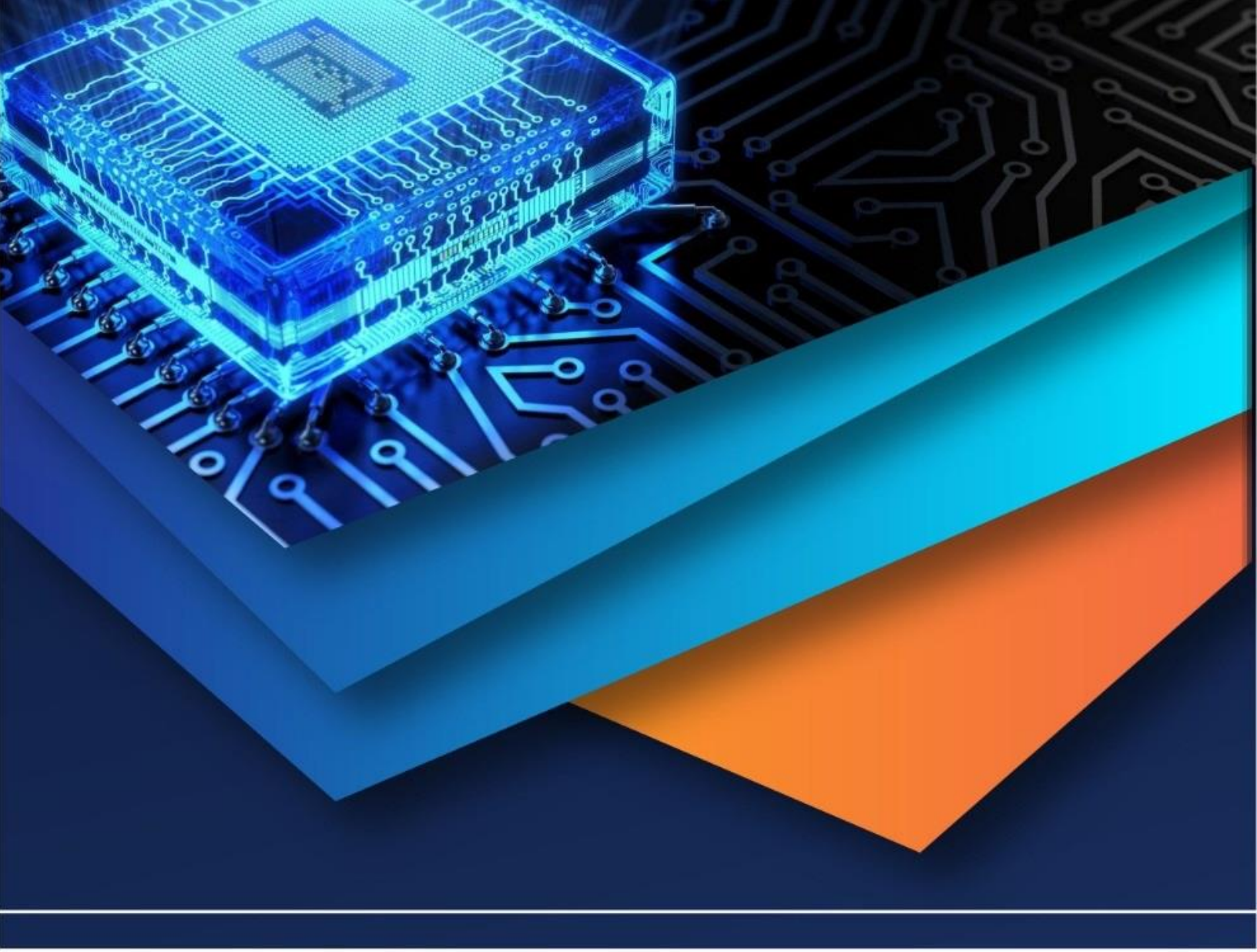

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