



An Android Application for Better Health Defense by Rating Input for Normal Patients and Medical Data Record for Emergency Patients

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Abstract: *The paper gives vital information of the patients required at the time of emergency medical services. An application is created to get the blood report available at the time of emergency. Also the efficiency of doctors and hospitals/clinics is been rated by the feedback given by the regular and irregular patients is supported by the research model. Gives linking for real time data and analysis of doctors for patients medical data record and based on it the treatment will be given. The list of hospitals for Prosthesis, blood bank and nearest hospital location is also available. It will help to reduce medical diagnosis errors, to get more accurate, coordinated and safe health care, increases life-span of patients.*

Keywords: EMS, EHR, MDS.

I. INTRODUCTION

To check the efficiency of doctors and clinics is very essential part now days. Due to unnecessary treatments given by medicos and hospitals results into patients' health life into danger. Also rural vehicle accidents represent a disproportionate number of deaths, with less than 25% of the driving population involved in more than half of crash fatalities. Emergency medical response may be viewed as a sequence of many events beginning at the moment of the incident. From there, lots of time is required for accidents detection, reporting, preparation, dispatch, transfer to a specialty care center (if needed), travel to the scene, triage/evaluation, stabilization, transport to a care facility and finally the provision of definitive care and rehabilitation. Enhancing emergency medical services (EMS) is a possible avenue to decrease fatality rates and improve roadway, vehicle system and driver behavior. To avoid deaths at any accident locations a proper treatment will be given by identifying the patients. So an application to collect crash scene and patients data during response and transmit it to the hospital staff is needed. It allows for direct connection between retrospective and real-time data collected at the hospital and patients outcome data as information for patients record. The lack of patients information makes difficulty in assessing the efficacy of medical interventions or to determine their cost-effectiveness. Linking the records has proven challenging as there are no direct identifiers to allow them to be related, and as a result statistical matching approaches have been applied with some success. In many developing countries costs, available technologies, lack of technical experts and computer skills of staff, lack of data processing facilities are major issues as in [1].

The basic idea behind this application is for survival of the patients at the time of emergency. Also many other countries have introduced these kinds of applications but not successfully implemented. Every country including India should focus healthcare practitioners and on encouraging departments and to move to an electronic devices.

The main details related blood report, ECG, MRI details will be available. This project is needed to provide history of patient so that the time of hospital staff will be saved to get information of that patient. In emergency nearest hospital location is also available. Ratings given to each hospital and doctors will be helpful to decide the efficiency and transparency.

Goals

The Survey questionnaires were administered for this synthesis study to collect data on emergency medical responses practices with a focus on practices that are identified as effective or innovative. The following questionnaires are to be targeted:

- Patient outcome with treatment
- Response and transport time by hospital staff
- Cost-effectiveness for patients
- Use of better technologies to enhance emergency response system
- Innovative training for hospital staff and recruitment practices for emergency responders

II. REQUIREMENT ANALYSIS

Healthcare systems are fragmented, complex and use multiple information technology systems all over world. A patient's medical information often gets trapped in a legacy systems which are unable to be share with members of the healthcare community. There are some of the several motivations driving an effort to encourage integration, standardization and electronic information exchange amongst the various healthcare providers.

Existing System:

There are many applications are available in the form of website or mobile android applications.

Over the years a number of terms have been used to describe medical data record from a manual or paper record format to another format as in [3].

a) Automated Health Records (AHR): It is used in 1990's ,to define the collection of computer stored images of traditional health records. These records are scanned into a computer and images stored on optical disks.

b) Electronic Medical record (EMR): As AHR this application helps to maintain patients details like identification, laboratory results, medication and prescription generation, and healthcare information recorded by doctor during each patients visit.

c) Computer based patients record (CPR): It was also introduced in 1990's defines as a collection of health information for one patient linked to another by patient id. It also focused on medical alerts, medication orders, providing integrated data on a patient's registration and admission, financial details, and recording information from nurses, , and pharmacy, laboratory, radiology. Although this form was implemented in a variety of settings which focuses on exchanging health information's.

d) Electronic Health Record (EHR): Introduced in 2004, which gives health record information including patients' health profile , behavioural and environmental information. Includes dimension of time (inclusion of information across multiple episodes and providers).It contains patients individual information for life time. Use of EHR increased from 11% (2001) to 57%(2011) overall world.

e) Android applications: In many countries android applications have been specifically created according to the requirements.

Electronic health records gives full detailed data of patients but Android application gives a specific data of a patients as in[3].

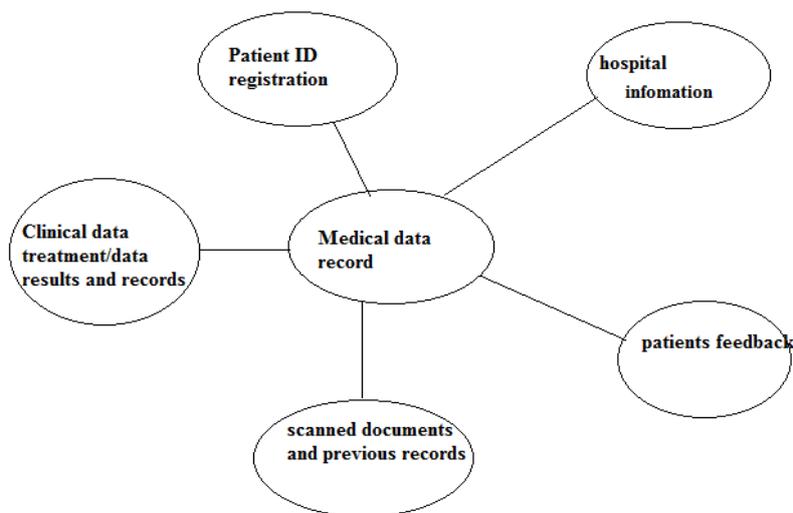


Figure 1: Medical Data Record

There are many countries who have successfully implemented applications in the form of websites and android applications.

USA: This paper has taken an idea based on USA Emergency Medical Services as in [1].

Electronic health record: Created for emergency patients at rural highway accidents in USA .

The CrashHelp (Idaho) system:

- i. A smartphone application:** Useful for paramedics that can be used to communicate video, voice, pictures, and patient condition information.
- ii. A web application:** Useful for emergency departments to pre- pare for patient arrival ,review multimedia patient condition information, , and communicate with medics as needed.
- iii. A backbone enterprise application server:** Useful for facilitating management and exchange of information between the first two components.

Indonesia: An EHR standard in Indonesia is being developed and is mainly concerned with the hospital environment for some data may also come from community healthcare sectors. (using a Local Area Network, approaching to WAN). The health workers can determine how many TB patients are being treated as well as a number of other diseases treated in their area.

Australia: The Australian Government is funding the implementation of a national health information network by creating **HealthConnect**– a proposed network which aims at improving the flow of information across the Australian health sector (HealthConnect 2000). It is a system involving the electronic collection, storage and exchange of patient health information via a secure network and within privacy safeguards. The HealthConnect objective aims at improving the delivery and efficiency of healthcare, achieve better quality care and patient satisfaction as in [3].

Table 1: List of Electronic Health Records in World

Country	National Healthcare IT Program
Australia	HealthConnect
Austria	ELGA
Canada	EHRs Blueprint
Denmark	MedCom
England	Spine
Hong Kong	eHR Infrastructure
Netherlands	AORTA
Singapore	EMRX
Sweden	National Patient Summary (NPO)
Taiwan	Health Information Network (HIN)
Myanmar	Mobile app for DOT
India	m-health (Indian portal)

Similarly many other countries have implemented website applications.

India: “Poor records mean poor health defense, no records mean no health defense at all”. So to have proper data base in the form electronic devices will be useful for country. In India electronic health record has already established in 2007. The recommendations outlined are an incremental approach for adopting standards, implementation specifications, and criteria to enhance the functionality, utility , interoperability, , and security of health information technology and to support its widespread adoption. It is to be kept in mind that these standards should be modifiable and flexible to adapt to the demographic and resource variance observed in a large and developing country like India as in[4].

The data will be stored in the table database format. There are many applications of medical data record are available in the form of website or an android applications.

India is has set up a National eHealth Authority (NeHA) for storage and exchange, standardization of electronic health records of patients as part of the government's [Digital India](#) programs as in [4].

- <http://www.nhp.gov.in/miscellaneous/m-health> (India national portal)
- <http://www.healthmemo.in> :An android application by Chennai institute called as health memo records the details of patients fr. Eg. Scanned images
- <http://www.mhealth.com> (Rajasthan)
- Mumbai: Blood donor list application .In this whenever the blood donor are required will be available.
- IIT Madras: Blood group collection .Here the blood group details are required for emergency.

In USA report: “Golden hour” refers to reach hospitals in 60 minutes immediately following the occurrence of multisystem trauma event as in[1]. From the following chart road accidents are continuously increasing in India till 2015. So in order to save patients life within 60 minutes India also has to think on it and needs to take urgent actions. So it gives a motivation for this project.

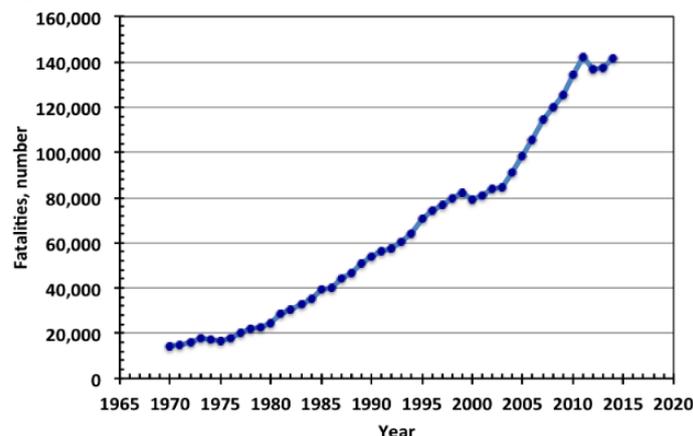


Figure 2: Road Traffic Deaths in India

III. PROPOSED SYSTEM

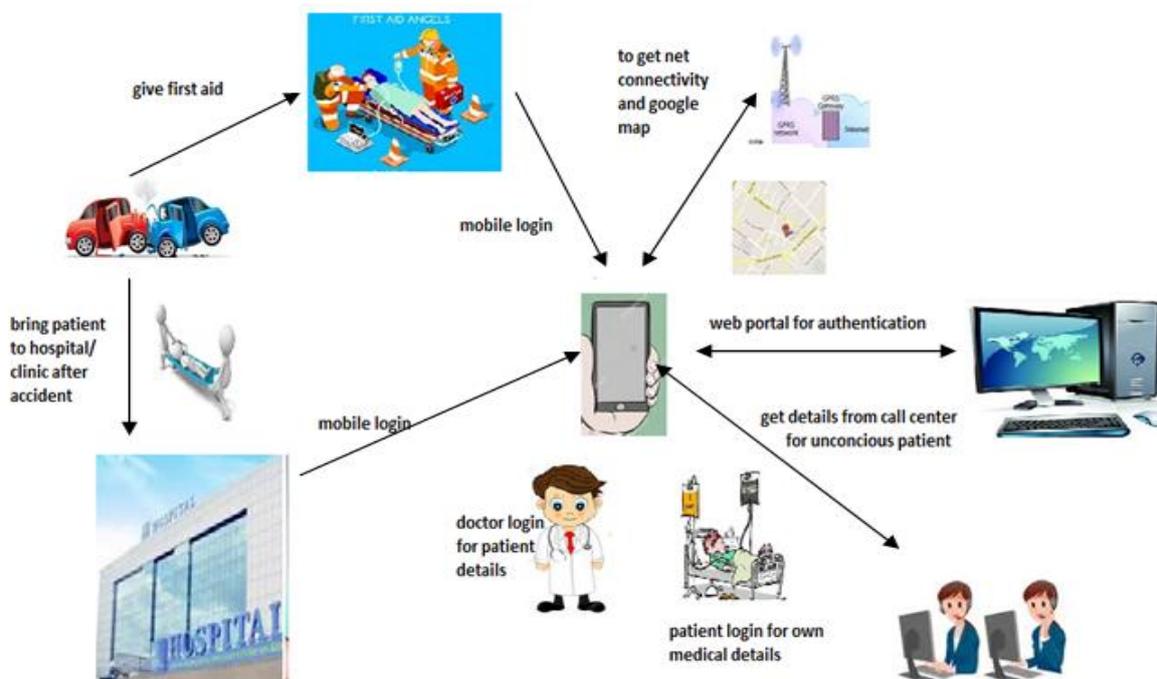


Figure 3: Proposed System

In this system patients will use this application based on their conditions:

a) If patients are in a normal case: If patients are in a normal condition then by login into this application they can give their rates according to their opinion of those hospitals and can check the specialist doctors availability.

b) In case of emergency: according to the architecture diagram if patients are brought into any hospitals and clinic after accident the details of these patients will be required. So for the emergency patients after accidents, we consider again two conditions:

- i) If patients are conscious they can directly login into the application by putting adhar number.
- ii) If patients are unconscious so we have to make a call to the call center. If vehicles are registered by vehicle number or driving license number so owners contact will be provided. Based on this contact we can get the details of the patient.

These details will be registered by the admin and hence doctors can access the medical records of patients.

This system has thought of seven attributes useful for normal and emergency patients.

Out of seven data the first two data will be required for normal patients only. And the Remaining details will be required for normal as well as emergency patients.

To access any data patients need to register by filling following personal details:

- i) Adhar number
- ii) Name
- iii) Vehicle number
- iv) Drivers license number
- v) Address
- vi) Age
- vii) Date of birth
- viii) Password (to be accessed by user only)

Also doctors need to be registered in the same way.

In the proposed model followings are the database to have proper interaction between doctors and patients.

When patient's registration is done through filling the details of medical blood report by themselves then a sticker of this application will be available in his android cellphone. The sticker is in the form of barcode which is also installed in doctor's application for the verification.

1) Patients medical records: In this record we will have patients' blood report at the of time emergency. If any accidents have occurred and if patients are brought into the hospitals so instead of checking or measuring the blood details we can directly login into the application by putting adhar card number. The conditions of patients are mentioned above. This is a confidential report which is to be filled by patients only in android application. Doctor can only access the details whenever required. The database details are as follows:

- i) Blood group
- ii) Blood pressure
- iii) Weight

- iv) Red blood cells (RBC)
- v) white blood cells (WBC)
- vi) Hemoglobin
- vii) Platelets
- viii) Addiction: for blood donor
- ix) MRI report image
- x) ECG reports image
- xi) Images full details of blood reports

In this data if patients are brought into the hospital staff will urgently get the details of blood details of patients instead of wasting time, so survival chances of patients are more.

If patients have registered by admin so whenever they required, the details will be easily accessible by clicking on the button search user.

2) Rating Input: This is useful for **normal patients**. In this the feedback will be maintained by the patients who visited to the specific hospitals. If the patients has a sticker and list of hospital he had visited available on his android application will be allowed to give the ratings to the specific hospital. The rating will be given based on the inputs as follows:

- i) Doctors specialty
- ii) Doctors treatment
- iii) Doctors counseling
- iv) Clinic or hospital staff (nurse and other members) behavior with the patients
- v) Fees: a) charged for treatment b) night charges if clinic is opened in the night
- vi) Clinic facilities
- vii) Doctors medication details: side effects if any
- viii) Surgical facilities and treatments.

Each attributes will be given rating from one to five. Based on this ratings (reviews) hospitals or clinics will get the ratings and according to that patients will visit that hospitals .So the fake treatments will be avoided.

3) Nearest hospitals: For this, hospital needs to be registered by admin in particular areas. After registration hospital location will be available on Google Map. It will be checked for real time purpose by checking the latitude and longitude. If any patient who is not satisfied by the facilities provided by the current hospital can check new registered hospital by checking through GoogleMap in the specified area.

The following remaining are additional attributes available on the website and later on can be put in the android format in future scope.

4) Doctors specialization: This is useful for normal patients. When the specialist doctor is available he will register in this application .So that normal patients will come know his appointment day and time. The following details to be filled by doctor for login:

- i) Doctor name:
- ii) Specialty:
- iii) Appointment time:
- iv) Working hours:

5) Medical history of patients: In this data also login will be done by conditions mentioned above. Here the following details will be useful for surgeries or medications to be given to the patients as follows:

Some patients are allergic to medications or doses so without knowing patients history it will be dangerous to give doses to the patients .So these kind of medical details will be available :

- i) Patient is allergic
- ii) Patient is diabetic
- iii) Patient is cardiac patients
- iv) Patient has done surgeries
- v) Patient had accidents previously
- vi) Doses given to the patients

The above two main details of patients will be required at time of surgeries .And by analyzing the details doctors can take further decision for treatments.

6) Airways: This is a treatment given to the patients in an emergency. If patients are brought to the hospitals and if there is difficulty in breathing so an artificial respiration tube is inserted into the vocal cord of patients. So for that medicos need to know or measure the thickness of vocal cord of patients and according to the grade levels I,II,III,IV the treatment is given. So the grade level data will be already available in the application. Medicos will access this by putting normal adhar number.

- i) Adhar number
- ii) Name
- iii) Age
- iv) Grade level – I ,II, III, IV

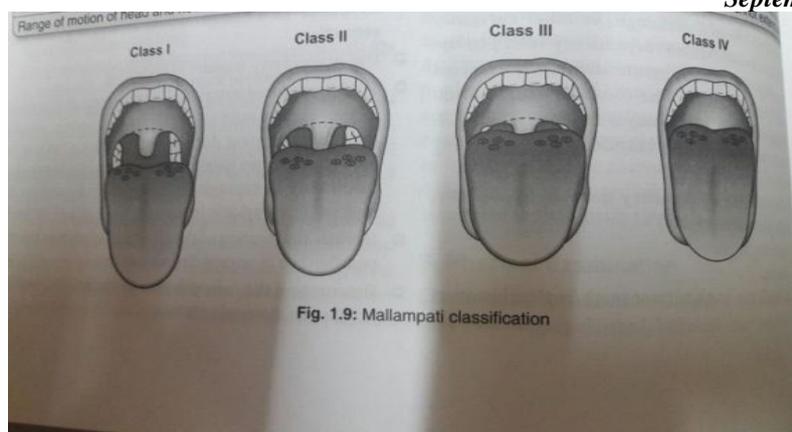


Figure 4: Airways Grade Level Types.

7) Hospital for Prosthesis: Prosthesis means artificial devices available to join than broken body parts. So very few people and medicos too are not aware of the hospitals. So the hospitals will be registered by Admin. So we can get the address of hospitals and available body parts with the quantities. So the patients/doctors who want to access can get the details by view.

If we think for huge response of patients to maintain the data officially and confidentially three-quarters of EMS(Emergency medical services). Then following is to be thought about.

Benefits

- Paperless medical history, healthcare costs
- Empowering to deliver right treatment at the right time
- With proper backup policies increase lifespan of health records of individuals that is from conception to cremation
- Faster search and updates.
- Providing accurate, up-to-date, and complete information about patients at the point of care, reduce medical errors
- Securely sharing of electronic information with patients and other clinicians.

Drawbacks

- People are unaware of these kind of applications (mostly in Government hospitals)
- A key reason, aside from initial costs and lost productivity during EMR implementation, is lack of efficiency and usability, lack of technical expertise and computer skills of staff, and lack of data processing facilities of application currently available.
- Patient, doctors and hospitals have to be registered.
- Internet connectivity problems.

Applications

- When any person who is in need of blood will access this application because this application provides blood report details.(ex. blood group details, user is blood donor or not,etc.)
- It gives nearest hospital location in case of more emergency.
- Most specific part is, this application shows the efficiency of each clinic and doctors through ratings(feedback) given by patients.

IV. CONCLUSION

- Faster and quick response for patients and medicos.
- Diagnosis will be done quickly.
- Death ratio of patients will be checked .
- Cost effectiveness for patients.
- Based on rating input (feedback) the chances of doctors cheating on patients will be reduced.
- It increases efficiency and transparency of clinics and medicos.

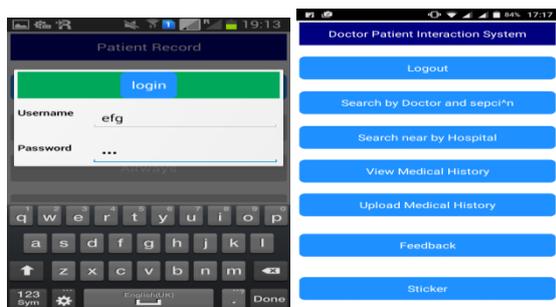
V. FUTURE SCOPE

As per architecture diagram this application will be useful while giving first aid and in an ambulance emergency medical services.

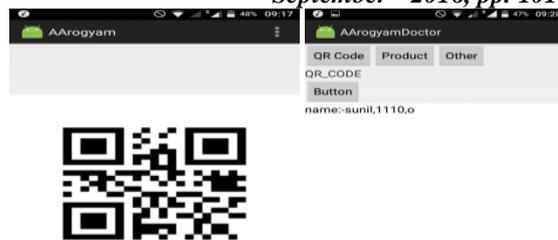
Also by huge response by patients, application will be useful in country.

Based on the collected data will be useful for video conferencing with doctors.

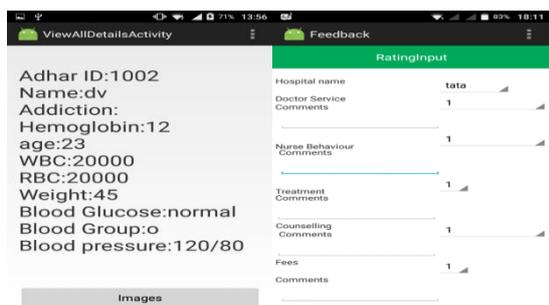
The website application attributes can be converted into android application.



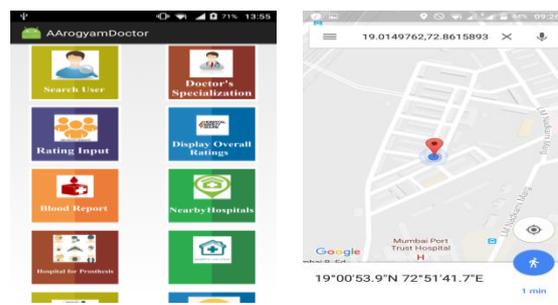
a) Patient registration and login on



b) Validation of patient for doctor and server



c) Patients blood medical report and feedback(rating input)



d) Doctors screen and hospital location

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