Smart Healthcare System

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Abstract— As technology becomes increasingly integrated into consumer lifestyles, innovations are changing the type of information collected and its method of use. Technological advancements also allow health care systems to become more holistic and spherical in focus, instead of the linear cause-and-effect relationships of earlier generations. The main objective of the system is which shows and help us to collect most of the information about Hospitality and Medical services. The system is developed due to the problems that exist when using the manual system. Data inconsistency, data mix with other data and problem regarding reporting is the main problem that the user is facing. Due to that, this system is developing to overcome the problems. At the same time, the correct use of it will reduce system complexity and improve software development efficiency and portability. This system provides and supports information and communication systems and technology that facilitate quality patient care, progressive medical education, and innovative research. This system mainly concern about Health Care System as to keep the record of the patients & doctors in database. This system manages all information about patient name, patient address, patient details, doctor information etc. It also store daily information of patient which is done by doctor during treatment of the patient.

Key words: Healthcare, Doctor, Patient, Treatment, Hospital

I. INTRODUCTION

Smart Systems are able to sense and diagnose complex situations. They are "predictive", they have the capability to decide and help to decide as well as to interact with the environment. Smart systems are critical in driving innovations in the field of medical technology, as they provide the basis for information-based care and cure.

The integration of micro sensors and micro-actuators in products will provide the healthcare professional to better treat and take care of patients in the hospital and at home. It provides care to patients in remote locations and monitoring systems that deliver a continuous meaningful data stream for better decisions.

A health management system should provide a healthcare to serve anybody at anytime and anywhere using personalized health management system to create an ideal healthcare system.

Fig. 1: Smart Healthcare System

II. EXISTING SYSTEM

Fig. 2: Traditional Healthcare System

- In existing system , manual intervention is required i.e. when a patient is admitted the registration of the patient is done manually which is more tedious and error prone job .Also when a patient is in critical condition, no alerts are generated which may sometimes cause loss of life. Also doctors may not have a provision of remote monitoring.
- Absence of a forum for the discussion of professional issues on health care industry.
- Not having a proper interface for the medical researchers to conduct their researches through sudden pop up questionnaires.
- Lack of interactivity & user friendliness of the existing articles providing medical services
- Lack of public awareness of the innovations in both the medical systems.
- Less motivation for the indigenous medical innovations.
- A surface that communicates the current medical needs of the general public needs to be established.
- Difficulty of reaching the medical resources due to unawareness of the physical location.

A. Example

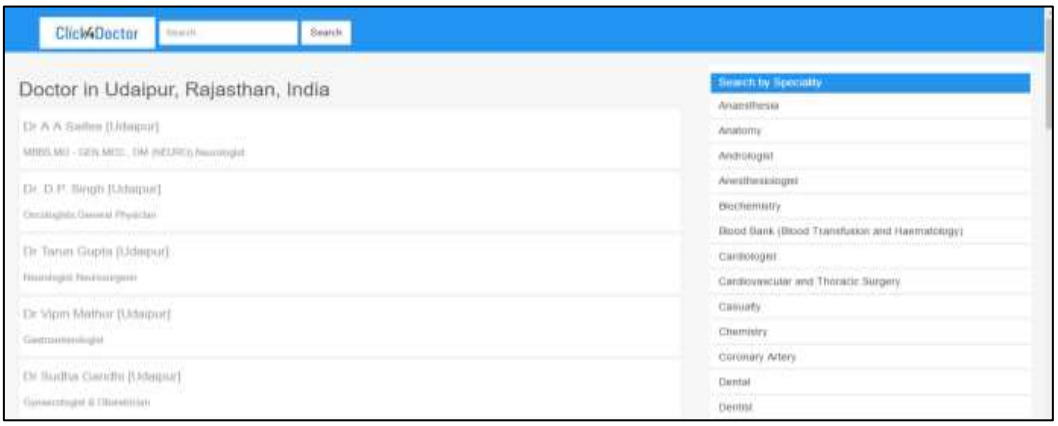

Fig. 3: www.click4doctor.in portal

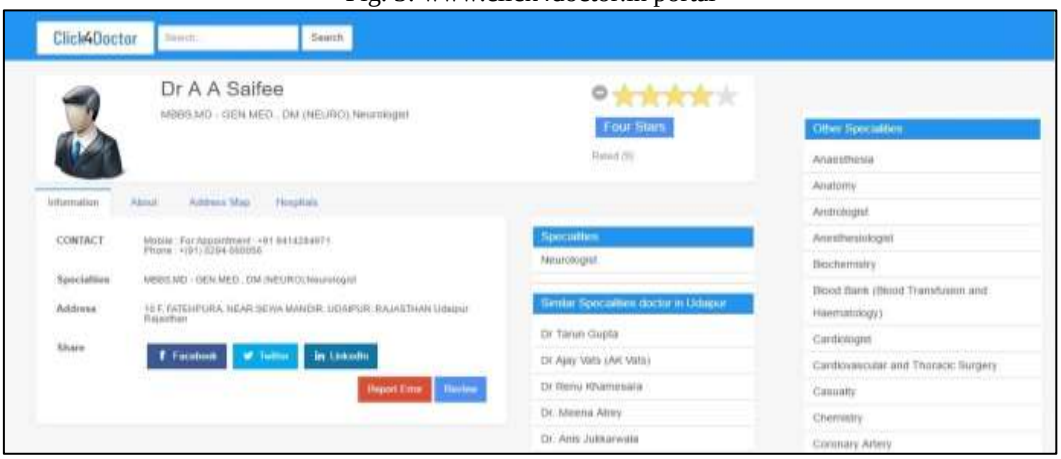

Fig. 4: www.click4doctor.in portal

As we can see in figures (Fig. 3 & Fig. 4) from www.click4doctor.in portal, this portal only shows the list of the doctors and only can show the details for the doctors but this portal cannot establish the communications between the doctors and the patients on itself. And this portal doesn't verify the doctor's information, so the given information on portal can't be trustworthy from the lack of verification.

In our system, we provide the communication facility for doctors and patients on the same portals without retrieving on another social networking websites. We allow the verification for doctors so the portal becomes trustworthy.

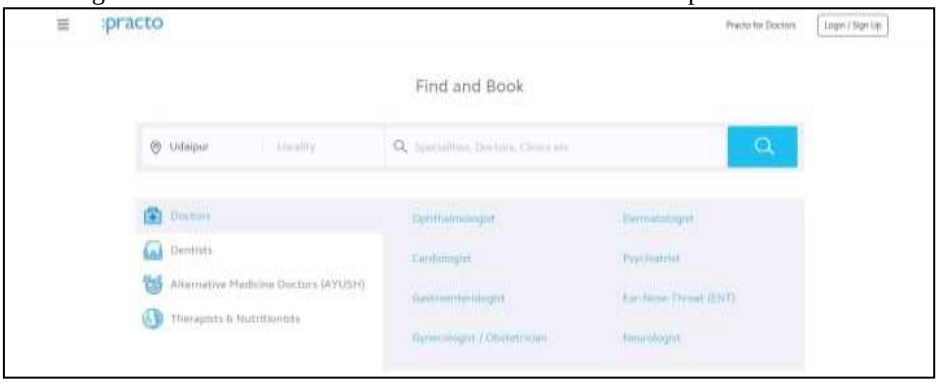

Fig. 5: www.practo.com Portal

The portal www.practo.com as in Fig. 5 has some features but this doesn't include the feature for emergency like providing nearby locations for the doctors but our system will provide the nearest locations of the doctors for emergency cases and also will provide the availability of the doctors whether they are available at their clinics or not.

III. PROBLEMS FACED BY PEOPLE

- The most common problem faced by the people is that they are not aware whether the doctor will provide the proper treatment i.e. if doctors who are not treating the patient properly and is not able to diagnose the problem of the patient then patient definitely will switch the next doctor. Most of the healthcare portals provides the online treatment and healthcare of the patient but those will not provide the provision for whether the doctors will diagnose the problem properly, we will provide the facility to the patient to get identify the doctors who will treat them properly by diagnose their problems. Patients will identify the best doctors with the feature of star rating which will come out from the feedback. If the patient will switch the next doctor then the system will automatically reduce the rating of previous doctor.
- Our system will keep the whole previous health records of the patients which will help the doctors to diagnose the problem of the patient properly.
- Our proposed system also will solve the responsibility issue i.e. if the prescribed medicine doesn't work for the patient or harm the patient in that case responsibility issue will be resolved by our portal that who was responsible either doctor or chemist.
- In some cases of emergency some issues comes from patient side like if he has no condition for informing or contacting to the doctor, in future our portal will solve this issue by adding the feature of informing by the thumb impression of registered patients or for non-registered patients providing the location of nearby doctors. The feature of thumb impression information will work for providing basic information of patient.

IV. OBJECTIVE OF PROPOSED SYSTEM

- The system is for the automation of patient information management and health care. It maintains two levels of users: administrator level, user level.
- The system includes maintaining patient details .Providing prescription, precautions, diet advice and maintaining all kinds of tests for a patient and report generation.
- The system aims to help the patients to take appointment online through internet and track their records through it.
- Polyclinic has been facing problems due to its paper based appointment system. With the increase in number of patients visiting, it has become difficult to manage the appointment system manually.
- The objective of this project is to solve these complications by creating custom – built database software to manage the appointment system.
- For the receptionist it makes easy to set date and time for the treatment of the patient to the relevant doctor.
- Doctor enters medical prescription and receptionist takes the print.

V. TECHNOLOGY STACK

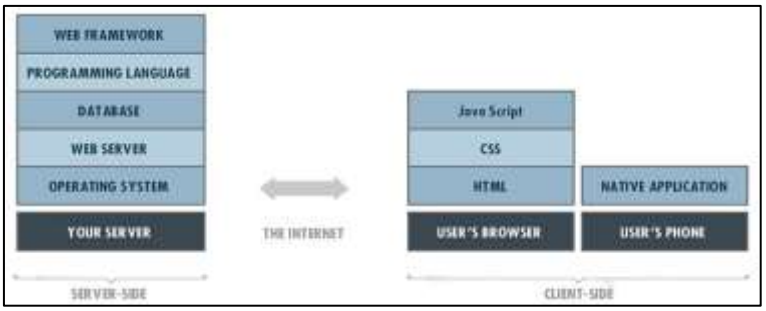

Fig. 6: Technology Stack

- Sublime text: Sublime Text is a proprietary cross-platform source code editor with a Python application programming interface (API).
- PHP: PHP (recursive acronym for PHP: Hypertext Preprocessor) is a widely-used open source general-purpose scripting language that is especially suited for web development and can be embedded into HTML.
- XAMP Server: XAMPP is a free and open source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming languages.
- MySQL: MySQL is an open-source relational database management system (RDBMS). The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety of proprietary agreements.
- Java script: JavaScript is a prototype-based scripting language that is dynamic, weakly typed and has first-class functions. It is a multi-paradigm language, supporting object-oriented, imperative, and functional programming styles.

VI. HIGHLIGHTS OF THE SYSTEM

A. Module 1

1) Doctor's Registration

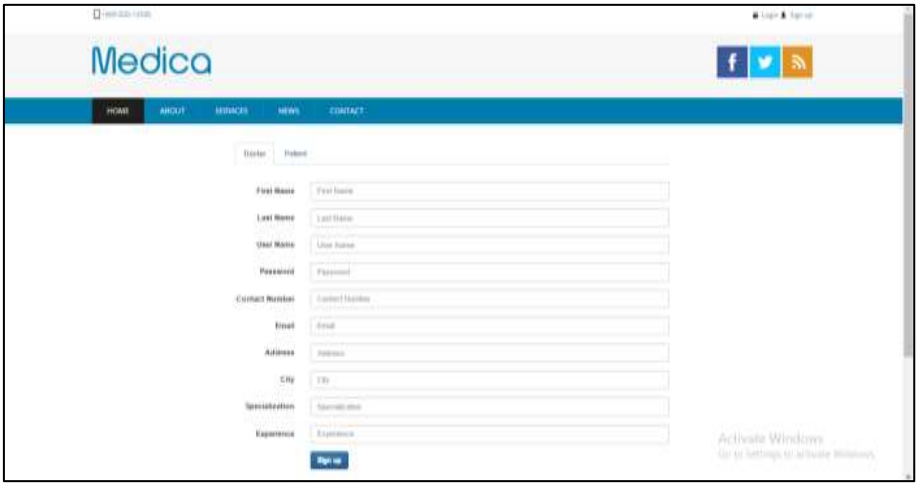

Fig. 7: Doctor's Registration

- Every doctor has to first register themselves to use this system.
- Doctor's has to enter his name, city, contact number, specialization, work experience, and etc.
- The administrator of system will verify all the details about the doctor. If the details are right then administrator approved the doctor for complete registration.

2) Patient's Registration

Fig. 8: Patient's Registration

- Every patient has to first register themselves to use this system.
- Patients have to enter his name, city, contact number, password, Date of Birth, and etc.
- After the registration, patient can use the facility provided by the system.

B. Module 2

1) Doctor's Profile

Fig. 9: Doctor's profile

When the doctor registered himself then his profile will be created and will be displayed as shown in the above snapshot.

2) Patient's Profile

Fig. 10: Patient's profile

When the patient registered himself then his profile will be created as shown in the above snapshot

C. Module 3

1) Patient's Appointment:

Fig. 10: Patient's Appointment

Registration is necessary for the patient to search, contact and communicates with the doctors and to take appointments with them. After the profile is created then only patient will search for the doctors according to his specialty and according to the city according to the requirements of the patient.

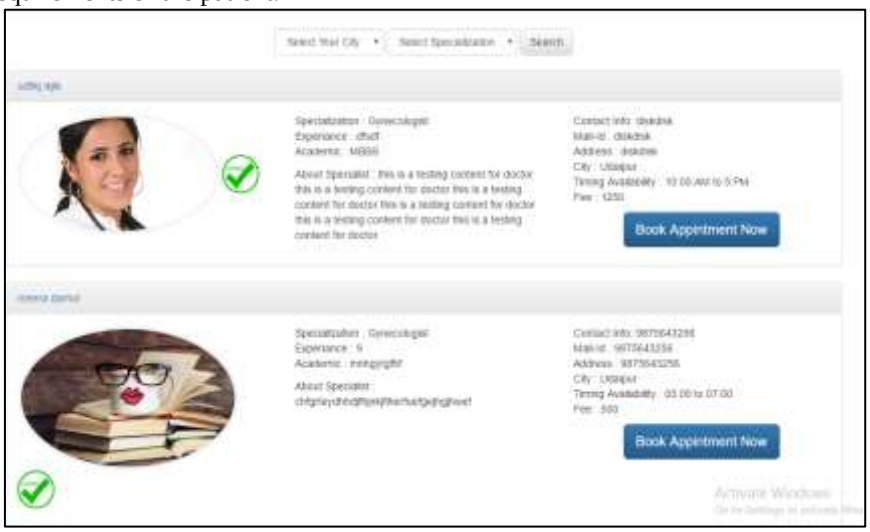

Fig. 11: List of Doctor's after Search

A list of the doctors will be displayed to the patient according to the ratings of the doctors. Patient will book appointment by paying a minimum amount which is necessary for all the patients for booking appointment with the particular doctor. Payment module will be displayed when the patient will click on the book appointment option.

D. Module 4

1) Payment Module

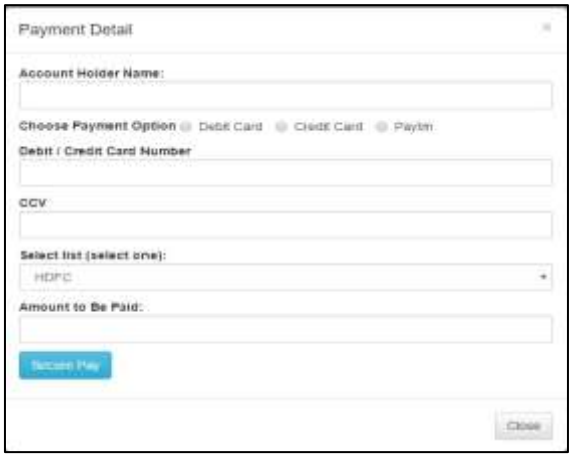

Fig. 12: Payment module

This is payment module in which the minimum specified fee has to be deposited by the patient in the doctor's account for booking the appointment.

E. Module 5

1) Doctor's Confirmation

Fig. 13: Doctor's confirmation

This is doctor's confirmation module in which doctor will view the list of the patients who wanted to take appointment with him.

2) Book Appointment

Fig. 14: Book Appointment

This is doctor's confirmation interface in which doctor will confirm the patient's appointment by checking his details and providing date and timings to the patient.

F. Module 6

1) Real Time Information

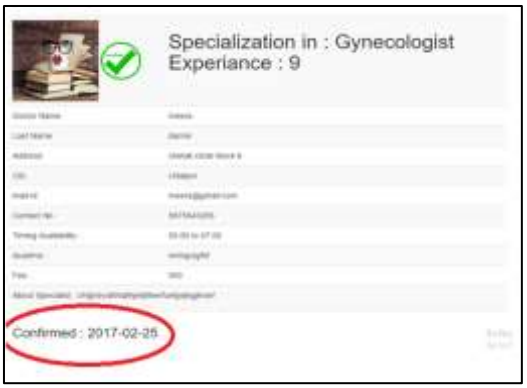

Fig. 15: Real Time Information

As the appointment of the patient is confirmed then he will be notified and get the message as it is confirmed on the specified date as shown in above figure.

Other than this, the real time information about the doctors availability will also will displayed with availability sign.

G. Module 7

1) Treatment

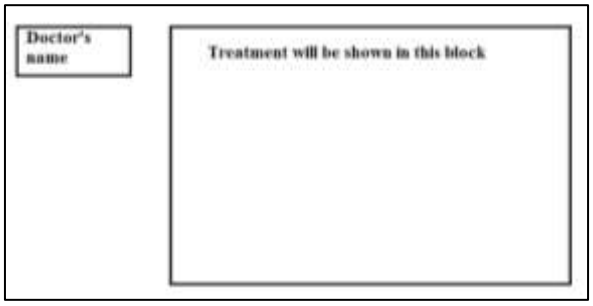

Fig. 16: Treatment

This is ongoing module which will provide detailed prescribed treatment for the patient. Doctor can write prescription directly on this page instead of paper or we can say that he can type the prescription so that the data will be saved immediately and patient's reports are generated easily.

H. Module 8

1) Feedback Analytics

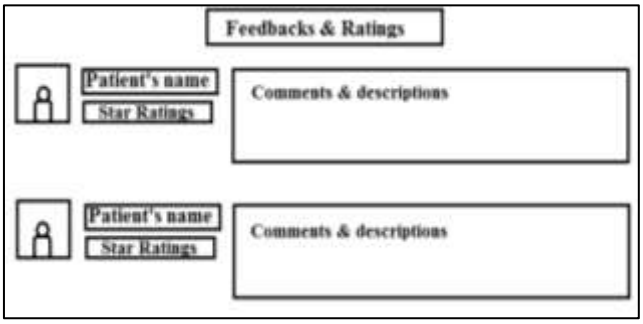

Fig. 17: Feedbacks Analytics

This is ongoing process which will provide ratings of the doctors based on the feedback given by the patient. On the basis of feedback sorting of doctors can be done and when patient will search for doctor at that time list of doctors will be shown in decreasing order according to their ratings so that patient can choose best doctor for themselves.

VII. ADVANTAGES AND FUTURE SCOPE

- There are many aspects that need to be considered in order to improve the integrated health care system and the quality of services especially the patient appointment and the appointment confirmation which work to save both patient and doctor's time.
- It's recommended in the future study the following:
  1) Enhancing the integrating health care management system to be able to manage all the information in the health care.
  2) Giving the patient more flexibility to using the health care system such as:
  - The patient can book the appointment by themselves online.
  - The doctor can change the appointment time and date by them self-online.
- Remote Patient Monitoring
- The integration of communication technologies into patient care has provided professionals with game changing solution to deliver a superior quality of medical attention, remotely.
- Doctors today can monitor health vitals of patients using a secure webpage.
- Manufacturers of implantable medical devices such as pacemakers have been integrating connectivity into their products.

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