

HOSPITAL MANAGEMENT SYSTEM BRIDGING THE BOTTLENECK IN HEALTH CARE SECTOR: AN INDIAN PERSPECTIVE

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Abstract:

A software package which will facilitate the activities of both Govt. and private Hospitals and will provide an appropriate solution to the people. This software package will help government, hospitals and the common man. This will work in websites and apps designed for the Govt., Hospitals and common man. The algorithm and flow chart of the software being described in the paper. This software will help the government to verify the status of hospitals along with the services provided to people. The authenticity and valuation for the different services can be known to the govt. for initiating necessary future course of action. This website can give the status of the country globally in terms of hospital management and to maintain right ratio of health services to the population of the country. This will equally help the government to maintain clarity in the information regarding the health services standard with comparison to other developed countries.

Introduction

The great challenge to Indian in next decade will be the healthcare system. Covid-19 educated us globally that an epidemic can destroy a country's economy and financial power. This became a global challenge to protect human along with the technological development. Healthcare system is a great challenge to country like India where urban and rural facilities are yet to develop. Although we developed a lot in terms of facilities but that is not enough for a highly populous country like India. The country has different categories of healthcare system as per the requirement and financial consideration. Today it became challenge for the government to identify the authentic health practitioners and healthcare system. An initiation should start from the government side to give information in portals to verify the authenticity of various healthcare practitioners, healthcare system and test labs. This research paper has given emphasis on a model designed to help the government to give direction to people and service providers for the betterment of the community.

Literature Review

Earlier many research studies on healthcare was primarily focussed on the potentiality of the Personal Health Record (PHR) systems. PHR developers need to understand natural problems related to designing of security, confidentiality, and availability of patients' data (Win et al., 2006). The concerned management is not always ready to adopt any new technology (Tang et al., 2005). Apart from the management, the paramedical professionals, technicians, lab assistants and specially the nurses resist to the use of technology (Bowies, 1997; Darbyshire, 2000; Mitchell and Sullivan, 2001; Schmitt et al., 2003). Key obstacles to electronic medical record were found to be: high initial financial costs, slow and uncertain financial payoffs, and greater physician time. Additional obstacles include difficulties with technology, complementary change in support, electronic data



exchange, financial incentives, and physician attitudes (Poon et al., 2004).

The hospital management face significant obstacles while establishing the hospital and huge cost incurred while trying for infrastructural setup and adoption of integrated information system such as HIS (Wolter and Friedman, 2005). Lack of adequate funds, insufficient resources and poor infrastructure are proven to be major bottlenecks in the adoption of Hospital Information Systems (Benson and Dha, 2011). Hospitals face huge barriers, in the form of physical disabilities, inadequate computer skills, non-availability of technical staff, lack of standardization, low rate of computer literacy that should be dealt with before adopting HIS (Archangel, 2007; Ismail et al., 2010; Hayajeh and Zaghloul, 2012; Itumalla, 2012).

Hospitals depend heavily on software vendors for all their IT solutions. The hospital software vendors extend their product line and services to cover the general purpose and the domain specific Open Source Software (OSS) health products (Munoz-Cornejo, 2007). However, the OSS faces huge issues such as standardization and integration, human-computer interaction and the structure of information that affects adoption of HIS (Hersh, 2004; Wears, 2005; Ismail et al., 2010; Khalifa, 2014). Ismail (2010) mentioned that raising users understanding of the system requirements and benefits are important to ensure success. Non-familiarity and uncertainty about the skill set pertaining to the use of new applications can affect acceptance of the system (Ash and Bates, 2005; Austin et al., 2006; Karsten and Laine, 2006; Yusof et al., 2007). Sharing of information among the various departments within the hospital is also a barrier in the adoption of an information system in a hospital (Jha et al., 2009). Studies have also highlighted other obstacles like lack of visible benefits, inadequate incentives, payer-provider relationships, marketplace competition and privacy of legislation (Sellitto and Carbone, 2007; Kaye et al., 2010; Singh and Muthuswamy, 2013).

Developed countries have adapted new health related technologies to a great extent. However, the developing countries are still struggling hard for it and facing a lot of obstacles like inadequate infrastructure, scarcity of resources, absence of skilled workforce and apathy of the management to invest in HIS (Anwar and Shamim, 2011). Time has arrived Indian hospitals must enhance the service quality by using information technology in order to meet the global competition as well as ever increasing patient's expectations (Itumalla, 2012). The adoption of HIS incurs huge investments, in terms of installation of technology, increasing the cost of the diagnosis and treatment which acts as a challenge to HIS adoption (Kalpa, 2012). Shortage of experienced technical staff, poor acceptance of hospital information systems software are major constraints for the adoption of HIS (Khalifa, 2014).

Objectives:

The healthcare information systems designed by the different researchers are based on the various factors associate to healthcare system. Here the research based on the govt. authorisation portal to verify the level of standards of health services and Pathlab tests. The objectives here to know the government portal or any authenticated sources available to verify the various healthcare services available in India also to design a portal to make easy for the patients to verify the authentication in terms of values and financial constraints.

Methodology

Methodology adopted for this research work is based on the secondary data. Various models available in India are accessed and verify for the new model designed. A computerised framework designed and the key players' role and input of the data process mentioned.

Analysis:

Field of invention

Advantages to Govt.:

- Controlled by Government
- No manipulation in price
- Upload of prescription to verify the authentic doctors
- Price fixation for all category of tests
- Assigning the authentic Pathology lab for public
- Location determination to verify the concentration of path lab as per the density of population
- The report will be available at the govt. website and the patient can get by putting the code assigned to them.
- Allotment of patient as per their location and capacity of the Pathology Lab
- Reports data will be available with the Govt. website and Govt. can utilize it for future prediction about the healthcare services
- Any particular time Govt. can get the statistics about the disease status in India like, Diabetes, TB, Dengue etc.
- Govt. can take action time to time with the report.
- Govt. can put stars on the basis of authentic reports

Advantages to Hospitals/Pathology Lab:

- All the Pathology lab will get the business all the time
- Effective utilization of employee and salary
- No price discounts from patients' side
- Effective utilization of medical equipment and aids
- Locational disadvantages will not face by the Pathology Lab

Advantages to Patients/Common man:

- Patients will not cheat by the Pathology Lab
- Patients will get uniform price
- Lab reports will be authentic
- Patients can know the authentic Doctors
- Patients will not carry always the pathology lab reports as it is available in Apps
- No fear of keeping record of reports

Support Industrial Applicability:

- Software company along with Govt. to design the Apps for Android Phones
- Support services to Pathology Labs
- Support services to Patients
- Allotment, Location based time allotment for patients (7.00 pm to 10.00 pm)
- Report received Latest by 1.00 pm and Displayed by 2.00 pm

Background of the invention/Prior art

- Same as literature survey.
- Describe the invention, by clearly distinguishing it from such a closest prior art.

Objects of invention

Prior Invention:

Govt.:

- No Government control over the authenticity of the report
- Govt. does not have the knowledge of the authentic doctors practicing and path lab operating in the state or country
- No knowledge of number of Authentic Pathology lab with expertise Technicians
- No knowledge about the Disease status in India
- No knowledge of Infrastructure facilities for day to day tests

Hospitals and Pathology Labs:

- No methods to keep records of patients' test for more days
- Multiple testing and more time consumption
- Unable to control the crowd for tests
- Test records in print form for different departments of the same Hospital which is a cumbersome

Patients:

- Test records available in Print form which may lost
- More cost for same test again and again
- Unable to know the validity of documents for all the hospitals

Claimed Invention

Govt.:

- Government control over the authenticity of the report
- Govt. will have the knowledge of the authentic doctors practicing and path lab operating in the state or country
- Knowledge of number of Authentic Pathology lab with expertise Technicians
- Knowledge about the Disease status in India
- Knowledge of Infrastructure facilities for day to day tests

Hospitals and Pathology Labs:

- Keeping records of patients' test for more days
- No Multiple testing and less time consumption
- Able to control the crowd for tests
- Test records in apps for different departments of the same Hospital which is a easy

Patients:

- Test records available in Android Apps
- No cost for same test again and again
- Valid documents for all the hospitals

Summary of the invention

App Design:

Name, Age, Code No., Password or OTP, Location, Disease name, Types of Pathology Lab tests, Allotment of Pathology Lab (Govt. or Patient) available nearby

Steps Followed in Apps (Patients)

- Step 1: Patients Registration
- Step 2: Types of Disease
- Step 3: Types of Test selection with price
- Step 4: Location Selection
- Step 5: Lab Availability with time
- Step 6: E-payment or COD
- Step 7: Code Generation

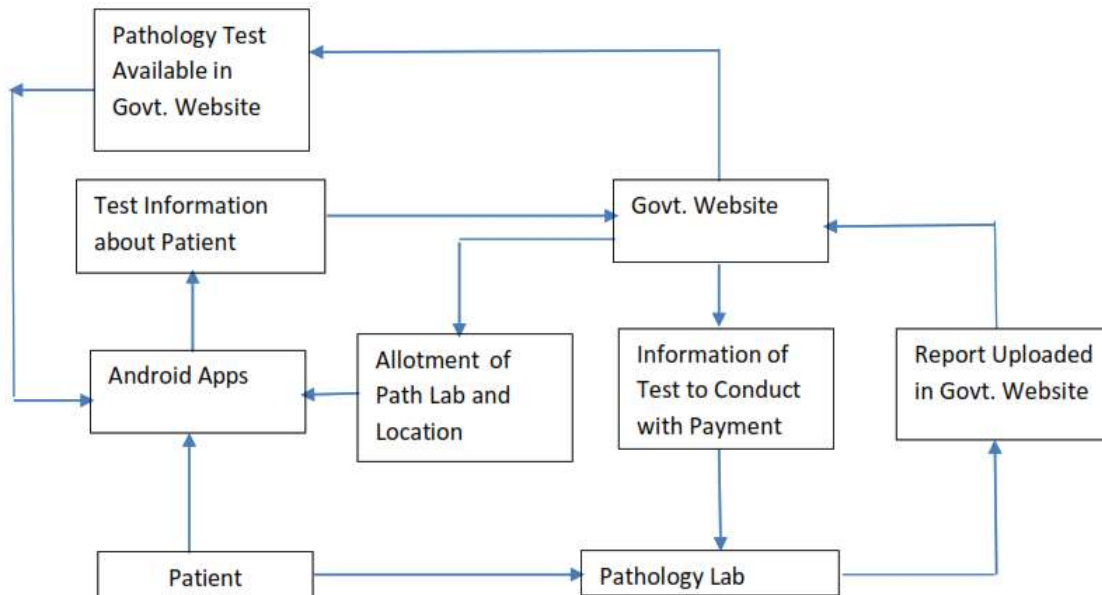
Steps Followed in website by Pathology Lab:

- Step 1: Patients verification with code of Patient
- Step 2: Patients payment mode verification
- Step 3: Patients test identification
- Step 4: Sample collection and report generation
- Step 5: Report uploads on the govt. website

Steps Followed by the Govt.:

- Step 1: Verify the report with pathology lab code
- Step 2: Display in the website with the patient’s code
- Step 3: Keep records in the website for future action
- Step 4: Analysis of statistics for future infrastructure for medical services

Brief description of the Model



Detailed Description of the Invention

This invention is related to the keeping the record and smoothening the function of health care services in India. This is the first time programme to inform, educate and make them associate with the e-service provision of government to protect and enhance the healthcare services in transparent basis. This platform will definitely help the govt., along with hospitals, pathology labs and above all the patients of the countries.

Patients:

Registration:

Input:

Register the Name, Age, Sex, location, Phone number, Email to the app to register yourself as a patient.

Output:

A code number will be assigned by the government for each patient.

Data Entry for Patho Lab Test:

1. Enter registration number along with OTP for each time entry to test form available in Govt. apps.
2. Select the types of Test:
 1. Blood Test
 2. Sputum Test
 3. Others Specify
3. Select the various tests:
 - a. Diabetes
 - b. Lipid Profile so on
4. Select the Labs along with the Price rates and stars assigned by review:
 - b. Labs with star
 - b. Tests
 - c. Prices
5. Select the on the basis of availability Time: From 7 am to 12 pm
6. Final allotment with time and centre

Test:

1. Patients will reach the Patho-lab centre at the stipulated time period as per the apps.
2. They will be in the que if the other patients will be available.
3. Patients will give their sample as per the entry and return back to home.

Result:

4. Patients will get their report in the once they will open the app by 2.00 pm.
5. Patients can save to see the report for the future.
6. The report will create a code number which is same for patient, pathology lab and for government.
7. Doctors from any hospital can see the report by entering the code in the website.

Government:

Input:

1. Assign Code to patient
2. Assign code to Pathology Laboratory
3. Assign code to Pathology Doctors
4. Assigning Highest number test per day to each Lab

Output

1. Report of profile of patients
2. Report of Profile of Hospitals and Pathology Laboratories

3. Report of the Patients from different Labs.
4. The website will keep the data for future course of action related to functionality of healthcare system in India.
5. This data can be grouped on the basis of location, Diseases, Age group, pathology lab statistics etc.
6. Government committee verified reasonable rate to all the patients
7. Fund transfer to respective hospitals or Pathology labs.
8. Display of report in websites with code number

Hospitals or Pathology Laboratories:

Input:

All the labs and hospitals has to register on the basis of location, employees' numbers, Pathology test spaces, kits availability, operational timing and closing, sample time vs result analysis time.

1. Name of the Lab:
2. Location of the Lab:
3. Qualification of the Technician:
4. Laboratory Certificate:
5. Pathology Doctors Documents for verification:
6. Patient capacity with minimum collection time:
7. Average Test kits availability:
8. Operation Time:
9. Closing Time:
10. Test Result Time:
11. Closing Uploading time:

Output:

1. Patient Code:
2. Patient name:
3. Patient Age:
4. Patient Disease:
5. Patient Location:
6. Types of Test:
7. Types of test with rate chart

Conclusion:

This package is going to help the people who are completely busy with their hectic schedule or engaged in services which are more confidential and protected. This solution will definitely enhance the productivity of the people who are unable get time for their own problems.

The focus has given to the problems identified by the patients during the search of medicals or path labs to go through various tests. The model if adopted will give tremendous help to the public along with the government to keep distance from all kind of uncertainty and mishap.

Future Studies:

As it is the preliminary design of the portal to access by the various health service organisations and patients a lot of issues may come when it be operational. The expectations are to minimize the huddle to run the portal smoothly. In future most developed models can be developed which can be operated through the mobile app.

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