TELEMEDICINE IN THE DELIVERY OF MODERN HEALTHCARE FOR ASSISTING REMOTE DIAGNOSIS IN ADDITION TO TRADITIONAL SYSTEM

[1]D.V.SRIKANTH, [2]A.S.SANTHOSHI, [3]O.LAVANYA, [4]M. K. KISHORE ,[5]Mrs.N.LEELAVATHY

[1,2,3,4]UG Student,[5]Professor, Department of Computer Science and Engineering,

Godavari Institute of Engineering & Technology, Rajahmundry, AP

Abstract:In today's hospital system, the availability of the doctors is not according to the patients need. People living in rural and remote areas struggling to access timely,good-quality specializedmedical care. Residents of these areas often have sub-standard access to speciality healthcare, primarily because specialist physicians are more likely to be located in areas of concentrated urban population. They are facing the problems in the process of post-medication and cannot find the immediate response from the hospital. A system is proposed where the user can book the appointment with the doctor and can also make decisions based on public rating of both hospital and doctor. A patient can choose the type of treatment like Ayurvedic, Homeopathy, Allopathy also an immediate response during the post-meditation period. The registered patient record is stored in the application which will make patients feel more in their control of health check-up also the concern doctors get more time to review individual cases by being ably supported by external physicians and specialists. A doctor at any time checks the user reports and updates to the user and connects the entire healthcare teams using video collaboration technology in which diagnosis and treatment processes are provided not only within the hospital walls but also to large distances. If doctor suggest necessary tests to the patient, the reports can be uploaded in the registered page wherein the doctor can verify the test results of the patient without personal appoint. The process of buying the medicines is automated. With Video collaboration patient can talk to doctor by just sitting at home in their improving access to Psychological Therapies.Overall, this work facilitates telemedicine facility to the patients saving time and facilitating to store medical reports as a contribution to society for improved access, quality, and cost- effectiveness. Further, future scope of the work is recommended to improvise the service.

Keywords: Specilized medicalcare, post-medication, Homeopathy, Ayurvedic, Allopathy, Psychological Therapies.

1.INTRODUCTION

TELEMEDICINE

Telemedicine started as a way to provide medical services to patients living in rural areas. It has grown into such medical interventions as treating soldiers on the battlefield as well as programs at urban medical centers which makes medical services available to underserved populations. Telemedicine programs allow physicians that are off-site to have a platform to see patients at rural and remote locations as well. The benefits of telemedicine include providing access to specialty care services in underserved areas, a more efficient use of medical resources, and a way to reach patients living outside a hospital's normal service area. However, implementation of telemedicine services requires a number of new protocols and safety measures designed to protect the privacy and confidentiality of patients, as well as to ensure physicians having and maintaining appropriate license across state borders, and to allow patients, caregivers to receive adequate training on how to use the technology. Furthermore, providing medical care to patients using telemedicine technologies brings about important medical, ethical, and legal issues that must be addressed.

An Electronic Health Record (EHR) is an electronic adaptation of a patient's medical history, that is preserved by the provider over time, and may include all the key administrative clinical data pertinent to that persons care under a particular provider, including demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data and radiology reports The EHR automates access to information and has the potential to streamline the clinician's workflow. The EHR also has the

ability to support other care-related activities directly or indirectly through various interfaces, as well as evidence-based decision support, quality management, and outcomes reporting.

2.LITERATURE REVIEW

Historically clinical care has taken place face to face. Telemedicine is aiming to support current care by increasing access and choice to patients and staff. Telemedicine or telepsychiatry (as it is known in mental health) has been in use since the inception of the telephone. It has used the telephone and increasingly video conferencing, e-therapy and mobile applications for diagnosis, therapy, follow up, education, and pharmacology [3].Due to the improvements in technology, such as larger data transfer and storage and computer power, this area is growing rapidly in mental health services, especially in rural areas. Much of the literature and evidence is from the USA [4]. This study is most substantial step in software development process. Before emerging the tool, it required to govern the time factor, economy and company strength. Once these things are pleased, then next steps are to govern which operating system and language can be refused for developing the tool. Once the computer programmer starts building the tool the programmers want lot of outer support. This provision can be achieved from senior programmers, from manuscripts or from websites. Before construction the system above concerns are taken into account for construction the proposed system. The motive of literature review is to gain in depth knowledge and understand in depth existing practices in fields of telemedicine. The review that follows will provide existing practices,problems being faced by the patients and service providers. It also provided to base of the present study which helped to conceptualize various factors and their relationships. It helped to find the gaps pertaining to the present research work.

3.PROPOSED SYSTEM

By considering all the limitations in the existing system, a system is proposed. Manual process has been automated through this proposed system. Patients have to fill their details through online. Through this website, patients can select the doctors and can take an appointment with respect to the timings given. Patients will get all their reports and medicine prescriptions in their inbox, just after the appointment session. In our project, md5 format is used to encrypt the passwords and personal details which are secured. Video calling is the added feature which is helpful to the patients who live in far distance and can accesssspecialists all over the world by sitting at their home. While taking the appointment, patient can view the timings and book the appointment so that they can choose a particular time according to their flexibility. Doctor can have less traffic so that they can check the patient conveniently. Patient can upload his reports securely and can also view the reports sent by the doctor after the session. Patient can get the medicine by uploading the prescription to the pharmacy available, so that their medicines are sent to their address without going to the medical store and also SMS is available to remind the patients about the appointments along with tablets they have to take daily. Post-medication is available in which patients can ask queries to the doctor when they are at home and the response is immediately sent to the patient's email ID or via SMS. Advantages of the proposed system:

- Patient can directly book the appointment anywhere at his/her own time.
- Timings of the doctors will be updated previous day itself.
- Prescriptions and reports of the patient aresent to the patient's inbox expect x-rays reports.
- Video calling is scheduled on time so that patient can choose the timing slots and book the appointment.
- Doctor can interact with the patients through video conference and can listen to the detailed problem at the time of the post medication.
- In post medication period the patient can ask queries and get the solutions immediately.
- Less traffic for the doctors because of the scheduled time slots for appointment.
- Doctor can early view their reports so that time is saved when he visits the hospital.
- Hospital admin can view list of appointments easily and assign the patients to the doctor.
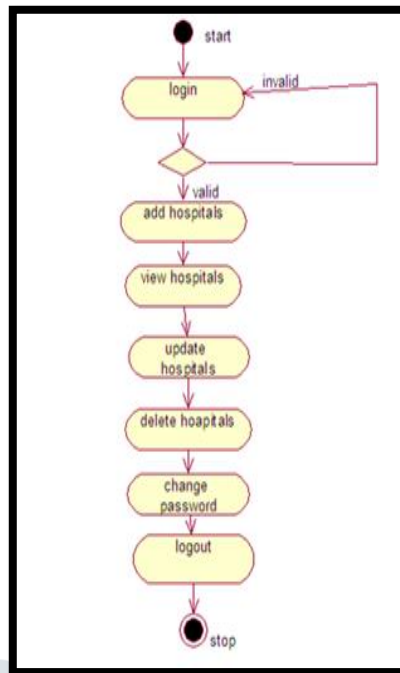
Fig 1:Dataflow diagram for admin

4.IMPLEMENTATION MODULES

Patient Registration and Login Module

      In this module the patient registers with patient details. After successful registration the patient can login. Here passwords are protected using md5 format for security of the user. The modules are

1. New registration
2. Login

User Home

      The module used by the patient only if he login successfully. In this module the patients select type of hospitals like Ayurvedic, allopathy, homeopathy based on this a city is selected by the patient along with timings. The modules consist of the following

1. Home
2. Profile
3. Make appointment
4. Upload reports
5. View reports
6. Upload prescription
7. View Prescription
8. Logout

Upload Reports& View Reports

      While booking the appointment the patient will upload the reports and prescriptions. These prescriptions are sent to the doctors assigned by admin. The patient can view the reports send by the doctor and also the reports uploaded by him.

1. Old Reports
2. New Reports

Doctor Module

      In this module the doctor will check the patient appointments, reports and send the prescriptions to the patients.

The modules are as follows

1. Profile
2. View patients
3. View reports
4. Upload reports

UploadPrescriptionand ViewPrescription Module

      Through this module, patients can upload and view the prescription in their online account itself. Here only the patient is accessed. The upload prescriptions are sent to the pharmacy module.

1. Old Reports
2. New Reports

Pharmacy module

In this module the patient's prescriptions are viewed and accepted or rejected by the pharmacy admin.

The modules are as follows

1. Home
2. View Prescription
3. Logout

Hospital admin Module

Hospital admin will add the hospitals, assign the doctors to the patients and sets the appointment for the video calling between the doctor and patient.

The modules are as follows

1. Home
2. Profile
3.Add hospitals
4. Assign patients
5. View patients
6. Video calling

5.CONCLUSIONS AND FUTURE SCOPE

Telemedicine services are often offered at lower costs and make availability of healthcare easier for the patients and doctors. There is an increasing need and demand for healthcare. Telemedicine can provide an expansion to the healthcare industry. The greatest value associated with telemedicine is lower wait times, reduced costs and also improvement in patient satisfaction. This application contains features which help the users to make an appointment through online. The management of the patients will be very much easier, efficient and less time consuming. The patient's details are already present in the database while registration so, the need of form filling can be avoided during emergency cases. It will be easy for the doctor and patient to access the records and reports, the communications among the doctor and patient is enhanced as the patient can get help online. Video calling to assist the patient in the distant place to connect to the world-wide specialists. The system is secure as a user can modify the information only after the proper authentication. Chances of error are also eliminated to large extent. Computerization and automation of the whole system helps in easy and fast access to the required information.

After reviewing the literature, analysing the data and visiting various telemedicine websites, following are the few recommendations proposed for future work.

1. The scope of the present research was restricted to the study of services provided in the telemedicine. The opinion and responses of general public and patients visiting in general OPD in the hospitals have not covered in the scope of present study. Therefore, it is recommended that responses of general patients regarding awareness of Telemedicine services should be considered for future study.

2. The service providers who have been considered for the study purposes were Doctors and Telemedicine operators only. The responses of policy makers and higher administrative directors may be considered for future study which will helps to improve the decision-making regarding framing new polices.

3. A telemedicine model to serve large population has been proposed. In future a prototype mobile application can be developed and deployed for implementation and use. The effectiveness of the model can be analysed in future study.

4. It is also recommended that the comparative study to compare practices of telemedicine services being provided in different states of India may be done. It will help to find the gap and improve the Telemedicine services in the state. Interstate comparative study may result in implementing uniform polices for whole India.

5. Security can be implemented while uploading reports and viewing reports by encrypting the files by storing in the secured format so that third party user cannot misuse the data. The use of the Rivest-Sharmir-Adleman (RSA) algorithm for public-key encryption that is widely used to secure sensitive data, especially when it is sent over an insecure network like the internet.

6. Online pharmacy can help the patient getting the medicines at his door steps by uploading the prescriptions to the nearby stores, which saves the patient's time. Developing an app integrated to website can help the patients to get the medicines cost, tracking of the order.

7. Integrating the tools like blood pressure, temperature detection to the website will be easier for both doctor and patients without visiting the hospital for check-up. It provides transparent information for both doctor and patient, also the information is automated and secured.

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