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Live Care: Virtual healthcare assistant

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ABSTRACT

Within few days COVID-19 transformed our lives and made us to go all virtual. Most of the essential services went virtual. However, there were some services which took time, one of it was Healthcare. To prevent the transmission of coronavirus Telemedicine emerged as a very efficient platform in connecting the doctors and patients. The Project aims at supporting the patients as well as the clinicians to bridge the gap and enjoy the service. Further the project will also have steps and tips to use the platform. Telemedicine is not a new concept; it was present before COVID-19 as well. It was more popular in the west and not much followed here.

Keywords— *Telemedicine, virtual, patients, doctor, healthcare, COVID-19*

1. INTRODUCTION

In the recent world everything is becoming digital, most of the services which are provided in the country are online. One of the biggest and a vital sector in any economy is the healthcare sector. Everybody wants to be healthy physically as well as mentally. Organizations or policies in place that are designed to plan and provide medical care for people are known as HealthCare Systems.

Telemedicine allows health care professionals to evaluate, diagnose and treat patients at a distance using telecommunications technology. The approach has been through a striking evolution in the last decade and it is becoming an increasingly important part of the American healthcare infrastructure and now developing in India and other parts of the world as well. Telemedicine has been into existence for a long time, be it booking an appointment over a phone call or calling the doctor for advice. In early 1900s with the discovery of radio, it was used in every possible industry. A Radio News Magazine from 1924 features a doctor who attended the patient via radio. At that point that doctor would have never thought that telemedicine would become so easy. It's just the medium of communicating has changed from a simple phone to a more advanced and complex web-based system.

The telemedicine devices today resemble the ones present earlier in the 1900s, however the modern equipment is portable and smaller in size with hi-tech properties. The recent boom in telemedicine has been based on two factors. First, there are advances in the communication technology. Second, telemedicine has developed due to the continuous efforts of various organisations like Practo in India. [11]

The recent patients expect a 24x7 assistance and physicians today can provide them the same by using telemedicine systems. Technologies like zoom meetings seem new, but telemedicine has been there around much longer than most people can imagine. Telemedicine can be expected to improve the quality of living efficiently by enhancing communication. The transition from traditional medicine practice to telemedicine has accelerated due to the current situation of the world. [11]

Also, in the time of the situations like pandemic for e.g. COVID-19 telemedicine is emerging as a critical technology which can bring medical care and people close [3]. As per today, in 2021 India is one of the worst hit countries in the world as far as Corona Virus is considered. In this current scenario telemedicine come out as saviour for countries like India. Getting treated with no or

minimum physical contact is the most important aspect of telemedicine. For patients who have mild symptoms and are in home isolation require continuous monitoring and support, telemedicine is being used here.

Telemedicine will grow continuously and will be practiced by more health care worker in many forms and the guidelines will be aiding the growth of telemedicine. Guidelines issued by the Central Government of India advice the doctors to consider the use of telemedicine as a normal practice. These guidelines will enable the medical practitioners to provide safe and effective medical care.[13]

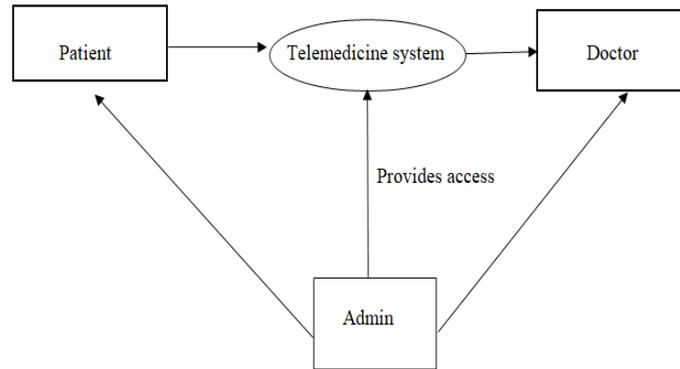


Fig 1: System Architecture

2. CURRENT SYSTEM

In recent times health care system is also started to use computerized system like other industries [1]. We can see many health organizations are already using such management system. Hospitals have their own software system which is used to carry out daily activities smoothly such as patient registration, scheduling appointments or tests, billing system and others. But this system is limited to the hospital itself and patients cannot use it personally and access from anywhere else. In the paper [1] the Fayezah Anjum has developed a system that the people can upload their own data in the system which is saved in the database and can be accessed anytime and anywhere. Peng Zhao, Jaie Lavoie and Eduardo Simoes [10] studied that as compared to traditional online appointment system web based systems are more patient centred and have many advantages over the traditional systems, overall it shows the growing trend for virtual healthcare.[10] According to Ahsan Jamal, Sabir Hussain, Ali Zafar and Asif Zafar Malik [2] telemedicine offer great help in case of disaster and emergency, It has proved that best healthcare facilities can be provided at affordable rates and efficiently.[2]

3. OUR SYSTEM

The proposed system of our paper does not only limit it to any hospital in particular. The proposed Telemedicine system is a web application designed for the providing health care solutions to general diseases digitally to the general people who are can access health care facilities from anywhere around the globe. In our system the privacy of the doctors and patients' data is also taken into consideration. It provides remote monitoring of patients based on interactive video conferencing. [3] The process starts with patients registering on the telemedicine system, choosing the doctor they want to consult according to their symptoms and booking an appointment. The patient should be ready with logging in the system and wait for the doctor to arrive. During the online consultation doctor should maintain the environment as natural as possible. [3]

4. METHODOLOGY

Telemedicine is a complex innovation and is technical, organizational and social. The communication and computing technologies which are developed and are used in the monitoring of health are one aspect of the innovation. A second important aspect of the telemedicine is social, organizational and human elements.[14]

Telemedicine alters the traditional doctor-patient relationship in terms of the essence. The functions of telemedicine depend mostly on the technological infrastructure available. Advances in the technology have created more data, enhanced the visualization and integration of various data from a single point. Huge magnitude of data can be stored now. In addition to virtual assistance with the coming in of AI, robots have also been developed and trained to perform certain surgeries.[14]

The fast development and deployment of technologies have altered the cost of telemedicine. The technological advances in medical applications have lowered the cost of assessing healthcare facilities.[14] Telemedicine is a web application for providing health care services to common people. This system is developed using Django framework. The database used is PostgreSQL. An online video conferencing assistance is provided.

4.1 Patient's view

Any user wishes to use this system need to register as patient first in our web application of Telehealth. As soon as patient is registered, patient's profile is created. Then patient needs to login to view the profile. Patient then needs to book the appointment and select the doctor. The first appointment will be charged. Furthermore, if follow ups are required, it will be given free of cost. For the appointment the patient will be gives the charging plans from which he can choose according to their comfort. Patient should keep the documents handy if any. Since the consultation would be online the patient should be equipped with the requirements. The requirements would be a system, a webcam, a microphone and a good internet connectivity.

4.2 Doctor’s view

Doctors who wish to join this system need to register them first. At the time of registration before the data of the doctor is updated on the site it will be verified first that the doctor is legitimate or not and then updated. After registration doctors can view their profile. Doctors can view their appointments and can start consulting accordingly. There is an arrangement for the video conferencing between the doctors and patient where doctor can view the physical condition online. While examining a patient the doctor should go through the medical history of the patient or any prior medications to ensure the safety of the patient. Similar to the patients a doctor should also have a system, a webcam, a microphone and good internet connectivity as the call would be over the internet.

The doctor should keep his equipment handy and not make the patient wait for a longer time. As much as possible doctor should maintain a natural environment, so that the patient does not miss the human touch of the consultation. The patients’ information and the medical diagnosis should be kept confidential and the privacy of the patient should not be exploited. The doctor has to answer all the questions asked by the patients. Regular Follow ups should be conducted if required.

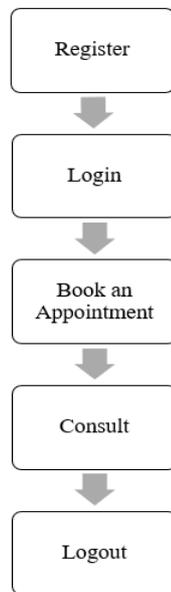


Fig. 2. Process flow

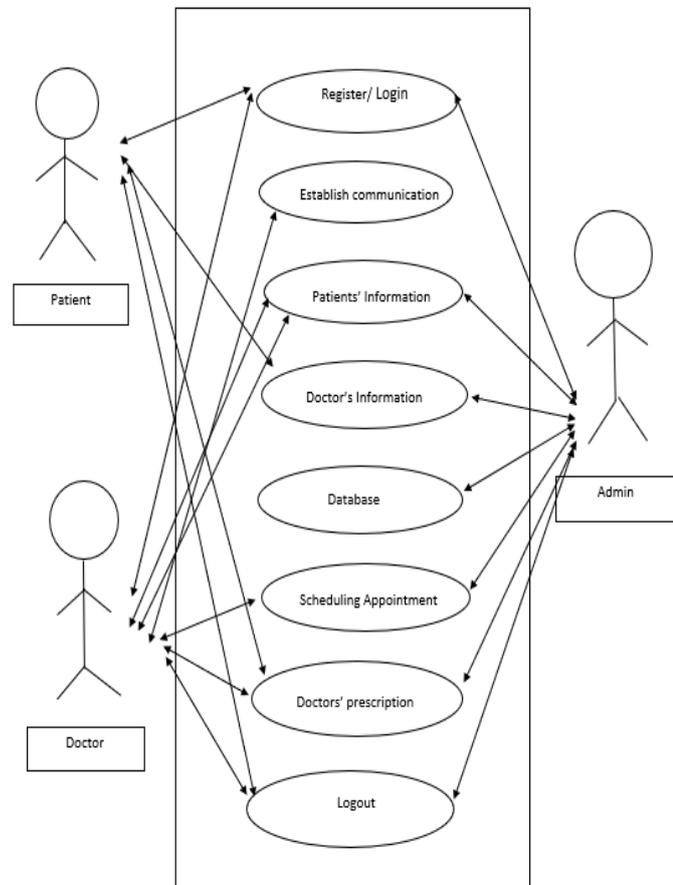


Fig. 3. Use Case Diagram

5. CONCLUSION

Every Individual has a right to good quality health care facilities. HealthCare has always been the most important sector of an economy. With many advances the healthcare system in India has also shown a significant growth, especially with the COVID-19 surge. Telemedicine has come into picture as today things are getting virtual. Telemedicine is a valuable tool that patients can use to be evaluated and treated by health care providers from wherever they may be. Telemedicine services are often offered at lower costs and make availability for some to obtain health care easier to achieve. With the use of economic tools, providers and facilities are determining this to be true. The greatest value associated with telemedicine is not only the lower wait times and the reduced costs that are achieved but the improvement in patient satisfaction and allowing the patient more involvement in the care they receive. We aim at developing a system which is easy to use, help the general public in getting treated from the best doctors in the country

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