

# DESIGN AND DEVELOPMENT OF WEB-BASED APPLICATION FOR HEALTH SCHEMES IN INDIA

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## Abstract

We have adequate medical facilities and policies in India, but due to a few factors many people are not aware of these facilities. Also, those who are eligible for Government schemes are unaware of their respective schemes to avail of the medical facilities. The Researchers have identified that, there is a wide gap between the schemes launched by the government and the outreach of these schemes. To circumvent these problems, we have developed a web-based application. In this paper, we will discuss the development of this website made to check the availability of nearby medical facilities for the people and to provide facilities for checking relevant Government medical schemes as applicable. This paper also illustrates the development of the website for the proposed health care system, assesses and recommends filling the gap in health insurance schemes, and explores the opportunities for the beneficiaries to enable the schemes.

**Keywords** - Health Insurance Schemes, Medical Facilities, awareness, website, empanelled hospitals

## I. INTRODUCTION

The health sector in the country India is aiming and appreciating to undergo any alterations across all the major segments, including health insurance schemes, medical centres, pharmaceutical, and diagnostics. The Government of India has initiated many programs intending to harness private expertise to develop India as a global healthcare hub. Few schemes that have been proposed accredit private providers to deliver services reimbursable by the Government.

In India, under the National Health Mission, the Government has launched several schemes for central and state Government employees, their dependents, and also for the people below the poverty line. Few examples of such schemes are Arogyasree in Telugu speaking states, Rashtriya Swasthya Bhima Yojana (RSBY) in Maharashtra, Yashaswini in Karnataka, Central Government Health Scheme (CGHS) for all the central Government employees throughout the country. Each scheme introduced has its structure and offerings to its beneficiaries.

Schemes act like a security for both current as well as former employees of the Government and to provide financial support for low-income groups. These Schemes are specially crafted for the betterment of the people. Statistics state that the awareness level of Health Insurance Schemes is quite low. It indicates 54% of HH's of the urban population and 51% of the rural population are aware of the Health Insurance Schemes [12]. Social and Political factors are also responsible for the awareness of these schemes. Low educational status, poor functional literacy are a few of the reasons for the lack of awareness.

In this paper, we discuss the implementation of the Web-based application (Website) that has inherent features to check the availability of near-by medical facilities based on search criteria and to provide facilities for checking related medical Government schemes as applicable. This application helps to bridge the gap in Health Insurance schemes awareness and to improve access to health services. Initially, the procedure is that the user has to sign-up and complete the registration process. To avail of any treatment, the user should select a location and a radius to search for the hospitals. Then a list of schemes empanelled hospitals and diagnostic centres along with treatments residing in the user-selected region will be displayed. From the enlisted hospitals, the user can select the doctor as desired and can book an appointment avoiding long-standing queues. The hospital and doctor suggestions are given based on the previous search and entered details. Registered users can store medical records, get first-aid information, and can dial to wellness centres in case of emergency. Also, an android application is associated with the National Health Scheme web application.

There is a great necessity of an efficient queue management system at the hospitals, as it is difficult for the patients to stand in queues for a long duration until the doctor is available to treat them. This system helps to manage the flow of the patients from entry to exit with efficiency. This paper is drafted as follows. In section 2, few relevant works have been discussed focusing on awareness, utilization, enrolment, developments about schemes, and medical facilities. In section 3, we have described the implementation of the web-based application and architecture of the proposed health care system. In section 4 results are shown. The conclusion of the project is drawn in Section 5.

## II. LITERATURE REVIEW

In the study [1], awareness and enrolment are found to be very less. In the survey conducted, 600 householders have participated, only 29% of the householders were aware of RBSY and 16(0.3%) householders had utilized the medical facilities provided under the RBSY. Also stated that state-specific health scheme enrolments, utilities by the beneficiaries should be monitored closely to fortify the accessibility, affordability, and awareness among the people [1].

The authors in [3] have mentioned the need for moving the current traditional health care system towards digitalization. We have developed a web-based application to provide online health care where users can store their medical records, get virtual communication between doctors and patients to avail of free medical services [3].

In [2], a survey was conducted among 2998 householders in New Delhi, India and the study says that only 19% of the people who participated in the survey knew about the health insurance

schemes, and 18% of them are beneficiaries of CGHS, ESIS, and RSBY schemes. Authors have stated that awareness and enrolments are low [2],[1]. A study has been conducted to analyse the awareness of the health insurance schemes in Bangalore, India and researchers found that only 75.7% were aware of the health insurance schemes out of 399 respondents and among those 302, only 66.9% (202) had enrolled and utilized the medical facilities [4].

As discussed above, CGHS is one of the key examples in this paper. Central Government Health Scheme is a Health Insurance scheme introduced for the benefit of people. Beneficiaries of this scheme are serving and retired central Government employees and their dependents. Electronic Health Records (EHR's) helps to enable better documentation and quick access to patient-centered records that help in decision making based on medical history. Currently, EHR's are handled only by Hospitals. Authors in [10] demonstrated the benefits of sharing the EHR's with the patients for one to manage their health records.

There is an enormous increase in the volume of the medical data collected from the patient's record and hospitals. The Authors in [6], described the challenges faced due to this increase in the volume of the data, to overcome this problem, the traditional health record system has to be replaced by Electronic Health Records [EHR's] [7]. Authors in [6] have presented new methods and techniques to understand the structured, semi-structured, and unstructured data complexity to get the desired output that is helpful in hospital and doctor suggestions.

Authors in [9], designed a smartphone application, called MedTouch to fill the gap between the patients and health care providers. The features of this application include transmission of the patient's data to the hospitals, visualizing the statistics of patient's health, reminders for taking medicines, tracking physical fitness, and providing other medical information [9].

Another mobile application of the health care system has been developed by the authors in [8] rendering services like booking a cabin, searching for the hospital, emergency dials, providing first aid-information, and suggesting suitable hospitals as well using the google maps. In another study [3], the authors developed a web-based application for storing medical data of the users and by creating virtual communication between patients and doctors that promotes the online health care system.

National Health Scheme Portal has been developed with a motive to improve accessibility and ensure availability by providing numerous options ensuring the enrolments availability of health services and educating about the health insurance schemes and the eligibility criteria. For availing any treatment, users need detailed information about empanelled hospitals or medical clinics.

### III. IMPLEMENTATION OF OUR SYSTEM

In this paper we discuss the development of the web-based application, named National Health Scheme Portal to provide friendly services to the users, to increase awareness regarding the health insurance schemes, and to meet the health care needs of the people of the country.

### 3.1 System Architecture

The proposed system architecture of National Health Scheme portal is as shown in Fig1. It constitutes of two major modules. The first module is for the administrator and the second module is for the general users. Administrator module is for preserving and updating data about the Government health insurance schemes, hospitals and for managing user information. The user module has a novel feature of displaying the list of the scheme empanelled hospitals and facilities based on the profile created and selected radius and location by the user.

### 3.2 Web-Based Application (website)

The front end of this web-based application is developed using the HTML, CSS, JavaScript, and backend has been designed using the MySQL and XAMPP as a server.

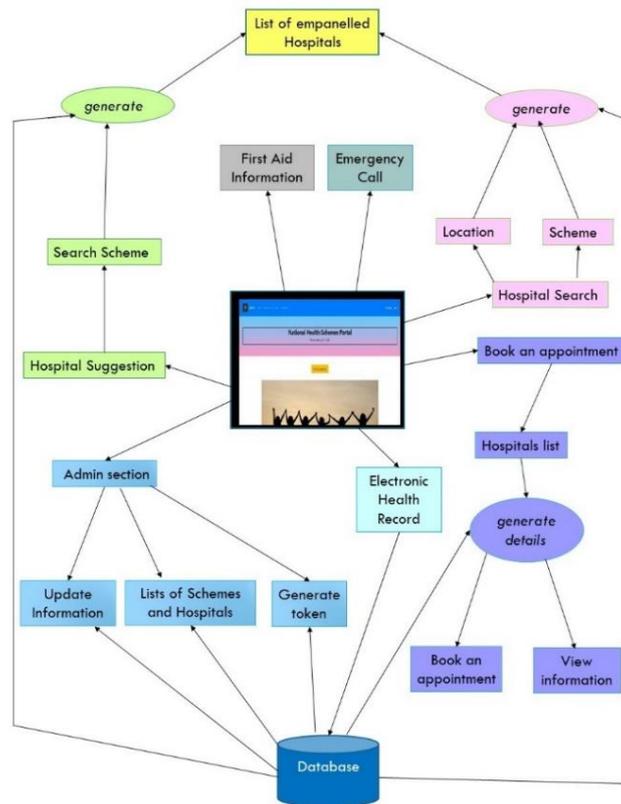
The website has the following sections:

1. An administrator section
2. Registration section
3. Search schemes section
4. Appointment booking section
5. A section for managing health insurance information
6. Hospital information section
7. First-aid information section
8. A section for doctor search
9. A section for booking an appointment
10. A section for emergency medical care
11. Electronic Health Record maintenance section
12. A section for hospital suggestions is also available on the website.

Home page primarily includes the following options:

1. Signup
2. Login
3. Gallery
4. Schemes and about.

Sign up page typically involves the Primary details like Full Name, Mobile Number, Gender, and address. Personal information like financial status, employee details, category of the employee, Aadhar card number, Health card details, and relation with the employee (self or dependent) are necessary for the enrolment process shown in fig.3. The main features of this application involve consolidating data, management of information about hospitals and schemes, ensuring data integrity, and timely retrieval of information based on user search criteria.

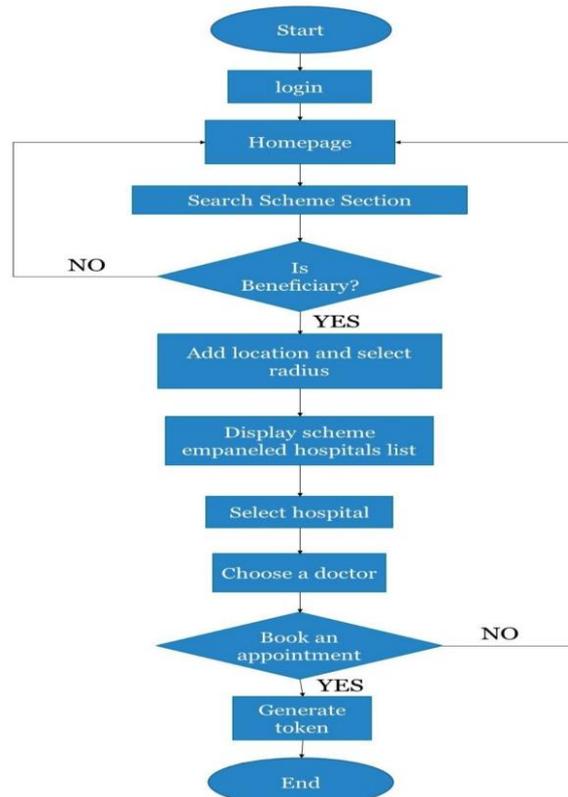


**Fig.1. System Architecture**

The search criteria work for three attributes namely schemes, hospitals, and specialties. To avail the treatment or to know about the schemes applicable empanelled hospital, the user has to select search criteria option. After which the user has to choose the add location option and select a radius, based on the profile created, the website will display the list of empanelled hospitals and diagnostic centres. Then the user can choose a hospital from the options provided by the website and can know about the facilities. For example, consider the scheme of the user as Arogyasree beneficiary, location added by the user as LB Nagar, and the radius selected as 5 kilometres.

Then the list of hospitals displayed will be:

Kamineni Hospital, Ozone hospital, Health care hospital, Shresta Orange Hospital and many others. The flow chart of this web-application is shown in figure 2.



**Fig 2. Flow chart of the proposed system**

To book an appointment, the user has to select from the enlisted hospitals and later choose a doctor and click on the option “book an appointment” for further proceedings. Then a token will be generated along with the schedule. All the registered users have an option to upload medical prescriptions and EHR. Based on the previous search and medical history, the suggestion of the hospitals and doctors is given for the users.

#### IV. EXPERIMENTAL RESULTS

The prototype for this National health scheme portal has been developed and implemented to provide friendly services ensuring accessibility, affordability, and awareness to improve the health care system in India. The prototype of the website is shown in fig 3 & 4. The proposed working model is shown in fig 5 & 6.

The system prototype depicts the information about the schemes and medical facilities, a common nation-wide portal is created to display the list of empanelled hospitals based on the search criteria and profile.

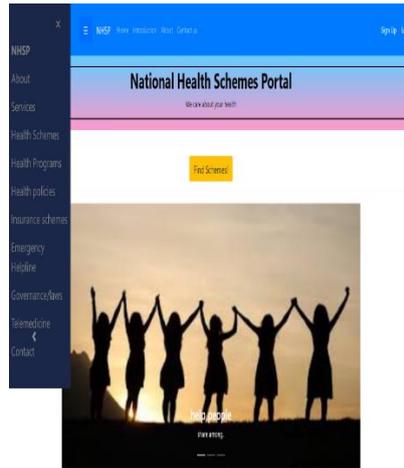


Fig 3. Home page of the Website

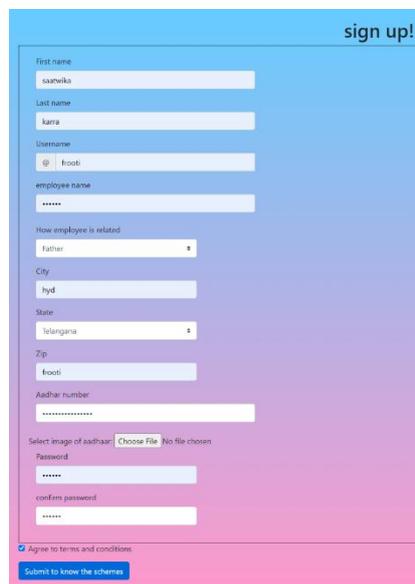
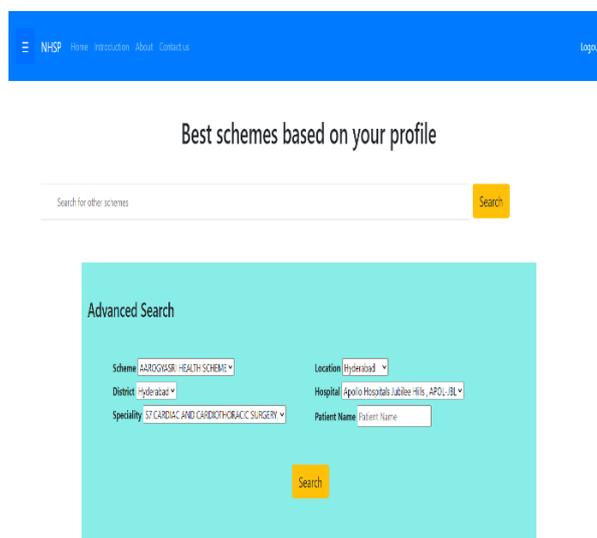
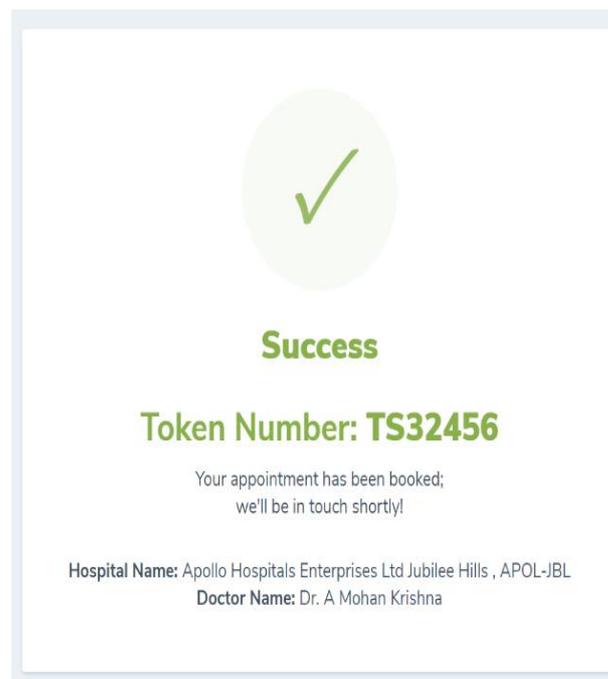


Fig. 4. User sign-up page for enrolment



**Fig.5. (a) Advance search options****Fig.5. (b) List of the hospitals based on search criteria.****Fig.6. Token generated for the user after booking an appointment.**

Users can search for schemes or hospital or hospital specialties by entering the keywords in the search option displayed in fig.5(a). The results shown based on the user search and further selected options by the user are in fig.5(b). The options included in the advance search are very lucid for the users. After booking an appointment, a token will be generated along with the hospital details.

This web-based application enables hospitals, diagnostic centres, and wellness centres to manage the patients' list efficiently and error-free for outdoor patients. This token generator

system helps in standardizing the data and automate the process for smooth management. The screenshot of the token generated of the working model is in fig.6.

## V. CONCLUSION AND FUTURE WORK

This is an effort explicated to improve the quality of health care as there is a great need to strive cognizance regarding the health insurance scheme for the people residing in both urban and rural regions. Accessibility, enrolments, and utilization have to be monitored closely and evaluate the implementation of the health insurance scheme. This can be used to reform the tenets of the health sector that are beyond the routine regulatory framework. This National Health Scheme Portal serves the feature of strengthening the Government health care system to promote the health sector in our country and ensuring friendly services that would meet the needs of healthcare for the people in our country. In the future, proceedings can be carried out through SMS/voice services eliminating the need for the smartphone and the internet connection altogether. This additional feature is taken into account considering the financial constraints to make it more convenient for the average rural citizen.

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