

An Online Web Portal for Donating Unused Medicine to NGOs

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ABSTRACT

Many people in India live below extreme poverty. So, it becomes difficult for those people with low income to pay for their health care and medication. As a result, they live with a number of diseases and as a result, number of deaths increases daily. Apart from that, there are various people who are overdosing on drugs even after they have stopped their medication. Here, we have set up a website for donating medicines to NGOs. This program will help people in donating their unused medicines to NGOs and they can distribute them to people who need them. This site will help in reducing the cost of health services by making better use of unused drugs as well as helping poor or people with low income to get better healthcare. This site is also assisted in assessing the availability of essential medicines for nearby NGO's. The purpose of this project is to donate unused medicines. Unused medicine can be donated to the poor for further use. This application helps users donate unused medicines to NGOs. Administrators manage members by logging in and deleting and blocking users who have provided incorrect or expired medications. The administrator needs to confirm the expiration date of the uploaded image. NGOs help manage inventory and track available medications.

Keywords

Distribution of Medicines, Website, NGOs, Health service.

1. INTRODUCTION

Life is an important issue in the human race. Recently, many people have suffered from health problems. In developing countries, health care is an essential part of life. Due to lack of doctors & paramedical staff, people in developing nations have limited access to health care facilities [1]. Therefore, healthcare is in high demand in those nations.

India is among the developing countries. India has developed public health and raisin programs and organizations in the private sector [2]. Also, access to health services in India following the merger plays important roles:

1. India is a populous country. The population of India is around 1.38 billion by 2021. The population of India is 382 people per sq. km.
2. There are an estimated 1.34 doctors per 1,000 Indian citizens, as per the World Health Organization (W.H.O). [3]
3. Poverty eradicates the well-being of the people and the

poverty of the nation while creating public health fears. About 6.7% of the whole population of India lives under the country's poverty line (the mean income of 2 USD every day) [4].

Because in these competitions, most people living below the poverty line don't pay for health care. Apart from the "drug dosage", it is the most important thing for most of them.

Therefore, they cannot afford the good healthcare facilities and medicines, suffer from several types of illnesses, and several people donate their lives due to this issue. People living in extreme poverty can afford many types of medicines required and can also keep medicines for further use [2].

Here, we intended to create a web site, which could help in collecting the unused medicines from donors through NGOs, & also provides for the low-income people or for those who can't afford good medical services and accredited physicians could suggest some medicines for low-income people who use this site.

We also help monitor the availability of essential medicines for NGOs.

Due to poverty, many people in the country are under-privileged and can't be able to buy costly medicine, and many people can't utilize the medicine properly. From the survey that we have created, we have seen that 86.9% of people feel that there should be a trusted platform where they can donate their unused or leftover medicines and they also found our portal to be a trusted platform and they are ready to donate the medicines on our portal and help the needy or poor people by donating medicines to them and then we can conclude that we have this reason as a major reason behind developing this web portal.

We have kept an open survey as a discussion forum to hear about why people do not want to receive medicines from a trustworthy platform or a trusted web portal where some people discussed many reasons behind them and the main reason is the trust factor or expiry date validation. Also, People have many doubts on medicine expiry date so, we have decided to also create an algorithm for expiry date validation on the portal itself. Therefore, we are putting an expiry date validation restriction on medicines.

2. LITERATURE REVIEW

This part of the literature study ultimately presents some facts

based on the speculative study of many writers who work in this way.

There are various portals that donated the fund to support the health analysis as well as treatment costs of the poorest people - MESCO Social and Environmental Management Organization: Give India was established on 28 April 2000 with the assurance that equal opportunities are the cornerstone of civilization.

All people should have the same opportunity to prosper in life, no matter what their circumstances.

However, this is not true. The diversified economy in India saw a growth rate of 10.91% in 2016-17 compared to 8.50% in 2015-16. India has also created a high rate of the most expensive people with a growth rate of 9.5% compared to the Asian growth rate of 7.5%. and to date, 36% of less than five children in India are malnourished*, 51% of women of child bearing age are concerned about anemia* 33 million children do not go to school and work in various forms of child abuse,

350 million Indians still face, and the problem of open evacuation due to the unavailability of sanitation facilities, and nearly 18,000 million villages in India still lack access to water storage facilities. Give India the interest to change this diversity.

They do this by bringing together people who want to donate and organizations that work to make a difference.

The effects of poverty are many and affect families for generations. Educating one generation or providing for income can help families reduce the cycle of birth defects.

India is populated country and our people are important to us. If each of us promises to help, we will be strong enough to solve our problems. we can be confident enough that as a society we will need support if we are pursuing a way of life. [5]

Friendship NGO, Donate - Saving to support or improve life in an amazing way - Friendship NGO:

Friendship is a global social work movement led by a vision of a world in which people, especially those who are hard to reach and unspoken, have an equal chance of living with dignity and hope.

The Social Purpose Organization (SPO) is an organization that deals with social problems and always puts the interests of the communities it serves first.

The idea of friendship is almost unchanged over the past 20 years and is more important than ever in a world that is facing increasing global challenges such as exclusion, environmental hardship, extreme poverty, inequality and injustice. [6]

Medshare.org, Provide Medical Services - Med Share:

Med Share is a charity that actively helps to illuminate the quality life of people, our planet and communities by providing as well as directing the delivery of more and more medicines supplies and services at the level of communities in need around us. Med Share supports increasing the size of the health administration and maintaining feasibility by imparting live resource training and providing services to healthcare professionals and medical organizations assisting needy people.

Med Share's distribution of powerful medical and mechanical products has reduced the performance of our nation and brought recovery, health and a promise of enhanced lives to hundreds of nations and uncountable patients. [7]

The opportunity and the challenges for developing countries to reinforce the most prior facility in Health Management

Information System (HMIS) which are also discussed in a study [8].

Some countries signify that there are some opportunities like increasing the internet usage, ICT based application development, & mainly the adoption of telemedicine, where many of the challenges are the rates of affordability and accessibility to the ICT services, data quality and quantity and proper utilization. In another study, Ruxwana et al. states that the perceived waste and ease of use by the suffered person's concern for e-health support in rural & urban clinics in various regions in eastern cape town of South Africa. [2] Some more research has been carried out on e-health services to estimate the prospective for their better usage. A study conducted by Mirza [9]

3. PROPOSED METHODOLOGY

In the following section, we will talk about the designing and building of systems. We are following two consecutive steps which comprise of: -

1. Develop the doctrinal structure.
2. Develop a web site.

A. THEORY DESIGN

This section focuses on the conceptualization of our program which is an illustration of a program that forms the main concept that could be utilized to imitate and understand our program.

The web based program would be a space between authorized sources (NGOs) and users that will deliver medicines to needy people. Sponsors may hand out their medications via this web-portal and registered physician could recommend medications to the patients who cannot afford these expensive medications.

Participants in our program are providers of pharmacists, recipients who will receive free medicine and linking resources that any NGO can respond to by maintaining a list of drugs, donor details, recipient's information, availability of drugs and can respond by collecting drugs from donors and prescribing drugs to recipients and thus complete the program. [10]

NGO's and pharmacists or providers need to create an account on our web portal where the system will verify the account and the information provided by the provider and NGOs. During the registration, name, address, registering email ID and password of the user will be mandatory.

The conceptual system is shown in figure 1.

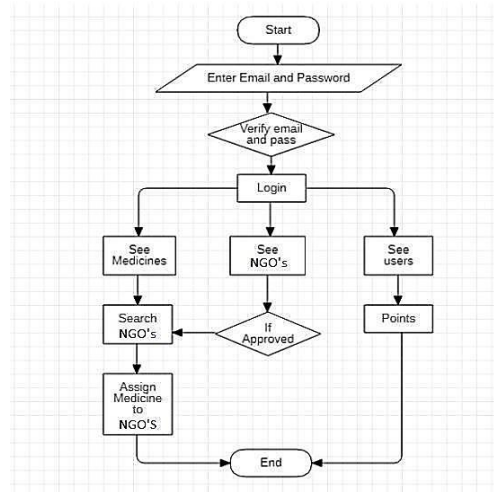


Fig 1: Portal Use Case Diagram

At the same time, the recipient can receive the medicines from the NGOs in person by showing the official prescription given by the doctors for the treatment. Alternatively, the patient needs to call a doctor that is registered with the program and if the patient is unable to pay for the medication, then the doctor may request the medication through the portal and suggest him to visiting the NGO for the reference to get medicines. Therefore, the recipients do not need direct access to the portal that overcomes their power as well as technology issues related to smart devices and internet usage. Prior to dispatching medication to recipients, the administrator concerned keeps a check on the availability of the prescribed medication.

Therefore, the program will meet the needs of program participants.

As we have the problem statement that we have also seen earlier like:

1. Loss of man power
2. Some medicines are very expensive.
3. It is difficult to find the needy people.
4. It is also difficult to utilize or found the leftover medicines.

Our proposed methodology is supposed to provide some major changes to the system like:

1. It helps poor people for medicine.
2. It will also help in maintaining the record of medicines.
3. Many needy people will get cured.
4. Admin can also verify the expiry date Automatically.

B. WEBSITE DEVELOPING

This section shows the part of how we build the medicine donation portal. We have divided the development phase into 3 parts as shown in figure 2:

1. Server End and Database
2. Security Features
3. User Display

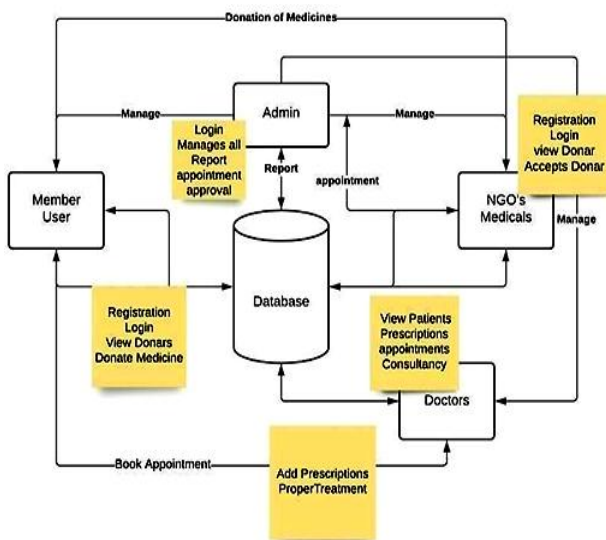


Fig. 2: System Architecture Design

1. Server End and Database:

In the beginning, we have prepared an Entity Relationship diagram (ER) database recipient's as per the requirement of the portal & then uses the database on the MongoDB server interface with sufficient security barriers to prevent the external unauthorized access. For privacy & security of our portal, we used two distinct credentials (administrator and user) so that, any other person cannot access or update the existing control panel configuration. The control panel verifies the delivery of the program from the user record and keeps the entire system regulated & up to date.

2. Security Features:

All the users are required to register first, to access the portal services and then the registration would be successful only after verifying & validating the necessary details & the required information. we have used the traditional HTTPs authentication that authorizes a strong user encrypted password which is verified by the email id with an encrypted quote. Session authentication based user login and access will be validated until the existed user will log out from the portal or the system is unavoidably removed after the exact time the session is over. Therefore, to enable these kind of major security features, we attempt to make our web portal more reliable & secure for the existing users. We have also used the input validation for the better and genuine registrations, like no one can enter the email address without using any domain name or no one can enter his contact number in less than 10 digits.

3. User Interface:

In our web portal, the secure access is provided to customize user information where the content of the portal varies according to user standards (Donor/NGO or receiver). The portal will display the content as per the login information whether the user is Admin, NGO or Public. It has the compatibility of certain devices and browser in a user-friendly method to make it easier to access the real user. In the development lifecycle, we have used the MERN stack technology i.e MongoDB, Express, React & NodeJS etc.

MongoDB is a document oriented database, ExpressJS is an open source web app framework written in JavaScript to create fast, scalable, and robust web applications, ReactJS is a JavaScript library for creating UI.

We have used MERN due to the flexibility and scalability, and it also allows easy modification and data retrieval.

4. RESULTS & DISCUSSION

Before starting working on our project, we tried to acknowledge the major need of the web portal from the end user's perspective. We have also followed some procedures for accessing the major requirements, firstly we opted for an online survey, we also talked to some persons about that condition.

For the efficient way to conduct the survey, we have created a google form where the end users had asked some situation based questions, their age and also an optional field for their profession. Also, we want to know about the human doctor relationship like how frequently they visit the doctor or book an appointment with him, and also how they consume their unused medicines and also about their interest to do welfare or charity work with their unused medications. We have passed the survey to the public through emails or via using social media platforms, we have also mailed to the entire college domain. We have sent more than 150 emails to various people & expected their valuable opinion through this circulated form so that we would have some insights and approx data. This survey link was on air

during the first week of November and we have made the survey link idle for the next one month to respond to the form.

One month later, we have found around 120 survey responses that we have considered for further analysis. From the survey responses, we have seen that the participants in that survey have an average age of 22.7. Among all the responses, the large portion of people are students, followed by servicemen, businessmen, housewives and doctors. We have also seen that the majority of people would concern themselves with the doctor when needed but only few will go for monthly body checkup. Here 71.7% of the majority stated that they have unused medicine at their home where the remaining 28.3% people do not have any leftover medicine. Many participants in the survey stated that most of the time or in many cases, the unused medicines will remain at home, after the expiry date is over, then some people will throw out all the leftover medicines, but some people were give those leftover medicines to the needy or to their relatives. see the survey bar graph below in figure 3.

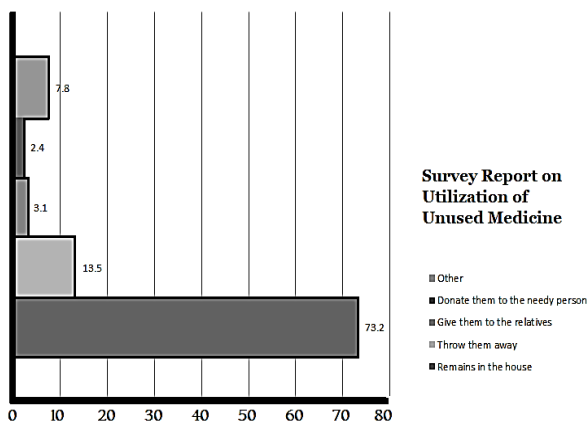


Fig. 3: Survey Report Utilization of unused medicines

The resulting conclusion depicted in the above table I & table II. From the SUT table, we have found that all participants/ members had successfully completed all the required tasks in very less time and the majority of the members completed at least one trial.

Table I: Summary outcomes of the UX (User Experience)

Participants	Level of Satisfaction (Average value)	They recommend the system to others (Avg. value)	Future Use (Average value)
Doctor (x=4)	3.50	3.00	3.75
Donor (x=4)	3.00	3.25	3.25
Admin (x=4)	3.25	2.75	3.00
Receiver (x=4)	3.00	3.00	3.70
Total (x=16)	3.19	3.75	4.38

No system error other than the internet or system failure occurred during the process and the frequency of errors while submitting the details regarding the medicines or user validation was very low as compared to all indicators of direct operation.

While sometimes the incorrect navigation and frequent requests for assistance were low; therefore, they finished the job well. While the table I shows that the user fulfillment scores collected for all users (doctor, donor, manager, and recipient) were very high. [11]

All the members who have participated in the system's ongoing

process show very much intent on allowing this program for the others and for the needy people & they are also willing to use it in the future references, which is also surprising because it represents a great level of satisfaction.

Table II: Overall Outcomes of the SUT (System Usability Test)

Participants	Task	Wrong Navigation (frequency)	Participants who were asking help (frequency)	Error while filling the form (frequency)	System Error	Task Completion Status
Doctor (x=4)	Prescribe/ Suggest medicines for poor patients	2.25	1.50 (Two members request help for 2 times, other two requests for 1 times)	1 (Medicine quantity surpassed the limit)	1 (Internet Failure)	Successful Completion while two members needs 2 trials, others needs single trial.
Donor (x=4)	Enter the details of medicines by just filling the form	1.75	2.00 (Two members request help for 2 times, one member requests for 3 times, other one member requests for 1 times)	1 (Expiry Date Missing)	0	Successful Completion while one member needs 2 trials, others need single trial.
Admin (NGO members; x=4)	Distribution of medicines to the poor people	1.25	1.75 (Two members Request help for 2 time, one request for 2 time & other one member request for 3 times)	1 (Wrong Password)	0	Successfully Completed (All the members needs only single trial)
Total		1.75	1.91	3	1	

After performing some trials of our online portal, we can now conclude the following benefits:

- Overcomes the lack of Health facilities: 2 donors and 1 NGO member stated that this web portal for medicine donation worked as an effective platform for the needy people or for those who were living below the poverty line. This portal helps them in acquiring or donating free medications and We think this will surely eliminate the poor's sufferings from various kinds of drastic diseases and will make them conscious regarding their health.
- Lowering the cost of taking the health related requirement: 3 people who need medicines and they receive the medicine through our portal (majorly poor people) thinks that the portal will surely help others to acquire the needed medicines as well as to eliminate the problem of buying expensive medicines.
- Better Resource Utilization: 3 NGO members stated that the system is helping the society by utilizing the resources properly even without any wastage or very less wastage. This is also a big reason for donating the medicines to others.
- Data Privacy: 3 donors found our portal to be a secure and trusted framework for taking care of the data privacy of the donor/receiver & also the details regarding the medicine.

From FAQs, we can conclude that everyone is agrees that this portal will surely introduce new ways to provide improved health & medication services to needy people [12]. Briefly from the experimental research, we can say that our system is functionally fit, efficient and ready to use.

5. CONCLUSION & FUTURE ENHANCEMENT

After testing the functionality of our portal we can conclude that every participant/member had successfully completed the task/operation in very less time and easy accessibility, and

Mostly the user can access the portal services while performing only a single trial. They have faced no portal error but only an internet failure occurred and the usual frequency of the installation error is much lesser compared to all indicators of direct operation. Sometimes the incorrect navigation will lead to the wrong outcomes.

We have found that our system can satisfy the requirement of the user. We have also taken a note on how we can familiarize the process of medicine donation throughout the society and how can we manage the wastage of medicines just by helping the others, the checkout or browsing time is also normal and we will also enhance the functionality to collect the user feedback and reviews. We provide a short 1-minute form to provide ease of access to users for submitting reliable and short feedback.

We have identified a limitation during the research of the portal that there are less number of people who participated in the survey and only those who were examined about the requirement and condition, they have given their responses to us by trusting their data confidentiality and after collecting the data, we have thoroughly evaluated the data and based on that data we are proving all the details in our research paper, we should examine the portal with a large number of people in upcoming months, so further research is also carried out in a systematic way for considering the insights with a huge number of real-audience for increasing the efficiency and suitability of the system and improving all over the technical features.

We can also opt for a mobile application if we find the traffic in our portal is getting high, then we can build a mobile application as a better alternative for this portal and assess the higher performance compared with this current version.

In the future, the portal can track the location for medicine collectors and distributors. we can also add the doctor suggestions or prescription for the patients, we can also add the live interaction video for doctor and patient.

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