ThalaCare-Application for Thalassemia Patients

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Abstract – Thalassemia is an inherited blood disorder in which the body cannot produce hemoglobin normally. Since patients with this condition receive blood transfusions regularly, iron builds up primarily in organs such as the heart, liver, and endocrine glands. Accumulation of iron in the organs necessitated chelation therapy. These patients must visit the hospital frequently to access and follow up on their health condition. Thalassemia will affect the ability of the body to produce hemoglobin and red blood cells. The aim of this study is to implement a Mobile Application expert system for thalassemia patients.

Index Terms – Thalassemia, Blood Disorder, Mobile Application, Blood Cells, Blood Donors, Blood Camp.

I. INTRODUCTION

The vast majority of the patients come from low-income families, and they need an estimated 66,000 units of blood annually. Thalassemia is an inherited blood disorder that requires lifelong disease management, posing a pecuniary challenge in public health management. Thalassemia will affect the ability of the body to produce hemoglobin and red blood cells. This study aims to implement a Mobile Application expert system for thalassemia Patients to support Diet plan support the lifelong healthcare of patients. The system provides patient-related details, and Organization Camp details, in real time.

II. LITERATURE SURVEY

Faheem Akhtar, Anum Shakeel, Jianqiang Li, Yan Pei [2] using Machine Learning techniques like LDA it is providing an affordable, less complex, and effective solution to predict acute disease using the CBC report parameters. The experimental analysis of the results shows that RBC, HB, and Ferritin (Iron) play a vital role in the establishment of an efficient thalassemia prognosis process. In this research, they used LDA, widely used dimensionality reduction technique; it is a supervised classification technique that computes the direction representing the axes and maximizes the separation between multiple classes.

S. Santini, A. Pescape, A.S. Valente, V. Abate, G. Improta, Maria Triassi, P. Ricchi, A. Filosa [3] using AI, they illustrate a study on the use of fuzzy logic for monitoring and management of the clinical status of β-thalassemic patients. In this paper, they exploit fuzzy inference machines to improve the knowledge-based CDSS used on day-to-day clinical care of β-thalassemia patients of the Rare Red Blood Cell Disease Unit (RRBCDU) at Cardarelli Hospital (Naples, Italy). An interdisciplinary research team made up of physicians, clinicians, and IT engineers conducted cycles of requirement-adjustment, development, and validation to iteratively build all the designed functionalities on the ground. The paper shows exemplary results on the online evaluation of Iron Overload during the health status assessment and care management of β-Thalassemia patients.

Parveen Bal, Shahir Shamsir, Nabil Warid, Azil Yahya, Jasmy Yunus [4] it enables Smartphones to be used as a tool to assist disease management, the patient and caregiver in managing their medication intake, and appointments with their physician. The development of this prototype is the first for thalassemia, the finding of this study will assist future developers embarking on designing blood-related disease management applications which share a similar process flow and data requirements. The limitation of this application is the algorithm used to calculate the interval of each medication dosage.

Anunchai Assawamakin, Nopphadol Chalortham, Taneth Ruangrajitpakorn [5] to effectively spread the underlying knowledge to individuals and close the knowledge gap, a well-constructed knowledge representation of PCP for thalassemia is established as an electronic knowledge base, that deter the success of PCP. In this paper, we focus on the development of the first knowledge representation.

III. REQUIREMENT ANALYSIS

- Scope By observing the daily life problem related to Thalassemia patients it is very difficult for managing the care worker as well as for the medical worker to overcome this issue; we have decided to build an application that will help patients by –
1. Managing diet plans of Thalassemia.
2. Arranging blood bags on time.
3. Arranging blood donors on the spot.
4. Organizing blood camp.
5. Document verification.

- Hardware and Software Requirements

Hardware Requirements:
CPU: Intel core i3 5th gen or above
RAM: 4GB or above
HDD: 1GB-1.5GB

Software Requirements:
OS: Windows 8 and above
Browser: Google Chrome
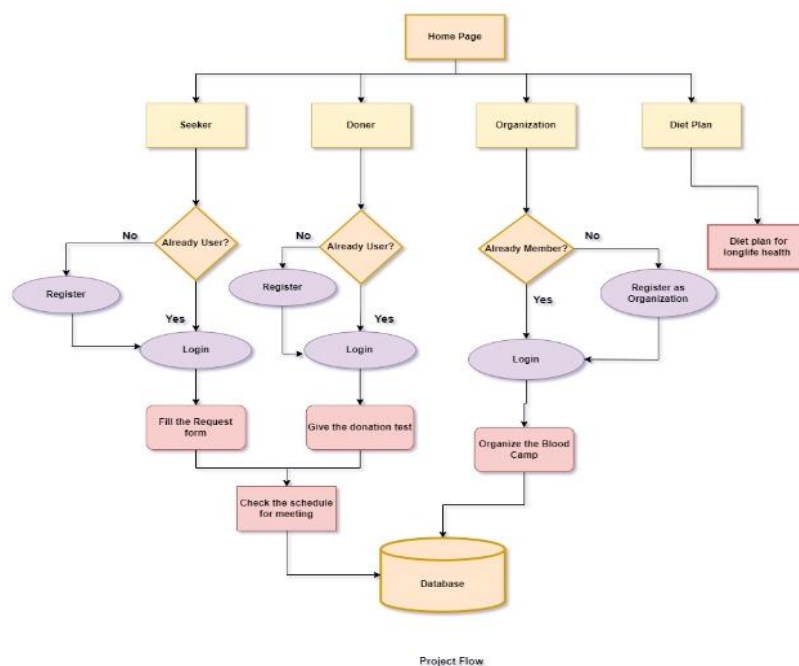Android Studio

PROJECT FLOW DESIGN

Figure 1: Project Flow Idea

From the above diagram,
1. There are four modules seeker, donor, organization, and diet plan.
Each of them will have a Login and Registration system.
2. After the registration user can access the system.
3. Users registering in seeker module need to fill out the form where a user needs to update some information such as name, contact, blood group, any other disease, etc. then they will able to make request.
4. Users registering as a donor then they need to fill out a donation test form with information regarding drinking, smoking habits, any blood disease in the last six months, etc.
5. Both the seeker and donor can schedule the meeting.
6. Blood organization can organize the blood camp through organization section.

IV. CONCLUSIONS

Technology can enhance the management of thalassemia. The Mobile-based expert system provides the requester, donor, and organization interface with instantaneous service. Thalassemia is a complicated and hazardous disease that requires expert treatment and proper involvement of the patient and their family. Additionally, the expert system can support a diet plan by recommending the appropriate care. The donor and requester can communicate with each other and schedule the meeting. In the future, the system can upgrade by implementing a map area-wise to know he nearest blood bank and the thalassemia hospital.

V. REFERENCES

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