

## **Ehfadhaya (Savelife)/Aatehayah (Givelife): A Blood Donor Website**

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**ABSTRACT:** *This research shows the process of creating a blood donation website for Oman. Blood donation is a widespread, crucial, ongoing process, so it is important that this website is easy to use. Several automated blood management systems are available, but none provides an effective algorithm that takes into account variables such as frequency of donation, donation date, and gender. In Oman, the Ministry of Health maintains a blood bank and keeps donors informed about the need for blood through a website. They also inform donors and the wider public where and when is their next blood donation event. The website's main goals are to educate the community about the benefits of blood donation. It also manages donor and receiver documentation and encourages voluntary blood donation by providing easy access to information about blood types and blood distribution in various hospitals in Oman, based on hospital needs.*

**KEYWORDS:** online ,blood donor, website, oman blood bank, blood donors

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## **INTRODUCTION**

Nowadays, there is a never-ending demand for blood donation, and it is crucial to find the donors who make a valuable contribution to the lives of others. This project is to create a website to enable patients to receive the blood they require, whatever their blood group, quickly and anywhere in Oman. The proposed website will supply a timetable for donation events and campaigns in an effective way which will ensure the supply of blood on time. General statistical data could also be collected, for analysis and planning future campaigns. The website will provide multimedia information to distribute knowledge among all people, especially among non-donors, to make a significant change in their attitudes through the provision of clear and easy facts about the blood donation process and its benefits. The project will integrate all the relevant information and spread it among the different blood donation centers and blood banks on behalf of the Ministry of Health. Finally, this project may provide a cost-effective way to enhance donation intentions and encourage donation behavior.

Blood is collected from donors to save the lives of other people. Generally, blood donation is a tedious process within the medical system, with many difficulties faced daily by the doctors and surgeons saving the lives of patients; they could not continue without the blood donation [1]. “The Department of Blood Banks Services in Ministry of Health (MOH) in Oman is responsible for provision of safe, efficacious and high-quality blood and related transfusion services covering all aspects to provide state of the art, up to date integrated services to the entire Sultanate. Currently, the blood transfusion services in the Sultanate of Oman are organized by a Central Blood Bank, Department of Blood Banks Services, with the responsibility and authority to oversee all blood banking and transfusion activities in the Sultanate, and Regional Blood Banks situated in each of the 13 regional hospitals” [2].

Blood donation is the process whereby approximately 450 ml of blood is collected from the donor; this represents a small proportion of the blood in a person’s body, (less than 10% by volume), as the average adult has about 5 liters of blood. The entire donation process takes about half an hour, although the actual giving of blood takes only 5-15 minutes. Blood is the major liquid in our body, delivering oxygen, minerals, hormones, nutrients and other important material to the organs, and helping to clear the body of waste [4]. Blood donation does not harm the donor, as the donated volume is replenished by the body within the next 24 hours. The donation process stimulates the bone marrow to produce fresh blood constituting red blood cells, platelets and plasma proteins.

## LITERATURE REVIEW

The following systems were identified from the literature:

*A survey of blood bank management systems* by Professor Animesh and his colleagues; a website and an Android app through which a solution to the ever-growing requirements of blood supply can be fulfilled. They used JSP, Bootstrap and Java for the front end ,and MYSQL for the back end [6].

*CBBR: Centralised Blood Bank Repository* by Ibrahim and colleagues is a centralized web-based system using HTML5/CSS & JSP on WWW.Platform. H2. Their database is hosted it on Apache Web Server, which supports transactions for both acceptors and donors: an acceptor can pay for the transfusion and the Center’s fees and a donor can be paid for his services [7].

*Online Blood Donation Reservation and Management System* developed in Jeddah in 2013 by Sara Abdulkarim and friends: a blood MIS to manage the records of the people who need blood so the donors can readily find them and donate [9].

*Blood Donation Management with Modern Engineering* by Tanisha Madan and colleagues in New Delhi, India (2021) described in the International Journal of Engineering Research and Applications (IJERA). This blood blank and donor management system uses a modern React application named Rudhiram, a web-based application which creates a link between donors and

the patients who need blood. Rudhiram is built on a JavaScript front-end framework React.js, with state-of-the-art management tools like Redux and uses Node (Express.js) for the back end and a new-age database MongoDB. Rudhiram provides donors with a list of nearby blood centers where a person can schedule a visit and donate blood easily with no paperwork; see [www.ijera.com](http://www.ijera.com) [8].

According to data on the demographic profile of blood donors, women make up 30% of all blood donations worldwide, though this figure varies substantially. For example, female contributors make up less than 10% of donations in 20 of the 111 countries that report. Young individuals donate blood in greater numbers in low- and middle-income nations than in high-income ones. For the development and monitoring of recruitment programs, demographic data on blood donors is critical [3].

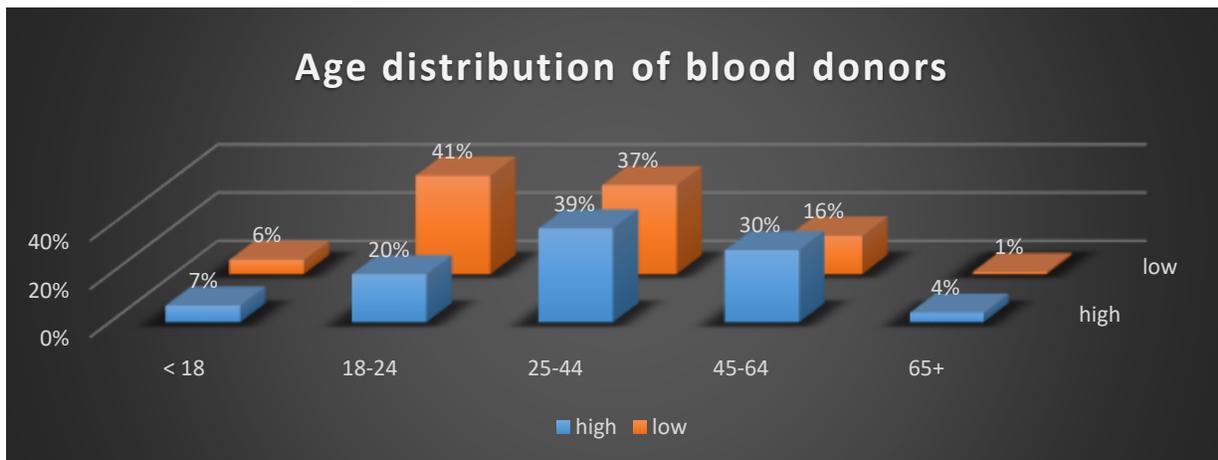


Fig. 1: Age Distribution of Blood Donors

## METHODOLOGY AND DESIGN

This website is designed to consider every usability point to make it easy for anyone to use. Users can obtain detailed contact information of potential blood donors in their vicinity. An algorithm has been devised, and the system implemented in the back end of a website utilizing HTML, PHP, and JavaScript. The local server is hosted by XAMPP software. Of the several automated blood management systems available, none provides an effective algorithm that takes into account variables such as frequency of blood donation, donation date, and gender. This research uniquely looked at all these characteristics at the same time. In practice, this search engine will aid automated blood donation transactions and other blood banks in locating possible blood donors from their databases.

The details of system users and their functionality are as follows:

1. Administrators have full privilege over the system's functions:

- Login.
  - Registration of medical organization (MO) users.
  - Viewing list of MOs.
2. Individuals can view the blood donation events and donate or can make donation requests:
- Register as volunteer donors and login.
  - Make an online request to the donor.
  - Book an appointment for donation.
3. MOs' privilege in the system's functions are assigned by the administrator:
- Login.
  - MOs register what blood types they have.
  - Request donors to donate.

The following diagram in Fig. 2 shows the details of system users and their functionality:

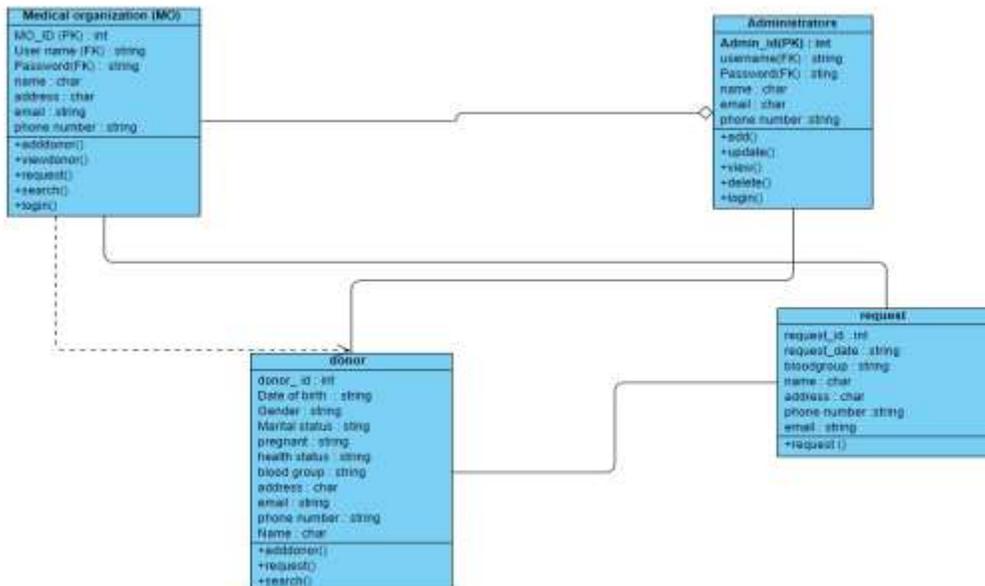


Fig. 2: Class Diagram for websites DB

An example is shown in Table 1 of a blood donation event to be organized by Muscat College over three days. The first day introduces the website and launches it for public. The last two days inform the community about donation, and registration takes place.

Table 1: Blood donation event

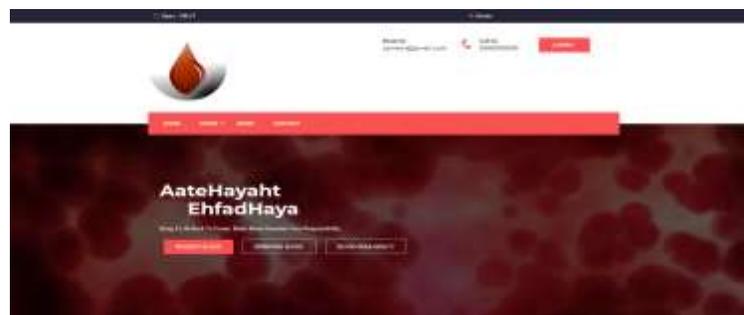
Day	Time	Location	Event
Day1	10:00am-11:30am	Online	<p>Introduction to the website</p> <p>Launching the website for the users</p> <p>Registration of medical organizations</p>
Day2	10:00am-12:00pm	Muscat College	Registration and blood donation
Day3	10:00am-1:00pm		

## DISCUSSION OF IMPLEMENTATION AND RESULTS

EhfaHaya (SaveLife)/AateHayah (GiveLife) is a website that functions as a place to donate blood and to educate donors, ensuring that the blood transfusion is as safe as possible.

The MOH blood bank ensures the availability of blood stock, and website visitors, especially donors, are informed about the need for blood with details of the next donation event. This blood bank provides many facilities for donors and patients, including how many times the former have given blood, with their blood screening results for each occasion.

Fig. 3 illustrates the web interface design and the main components of the home page.



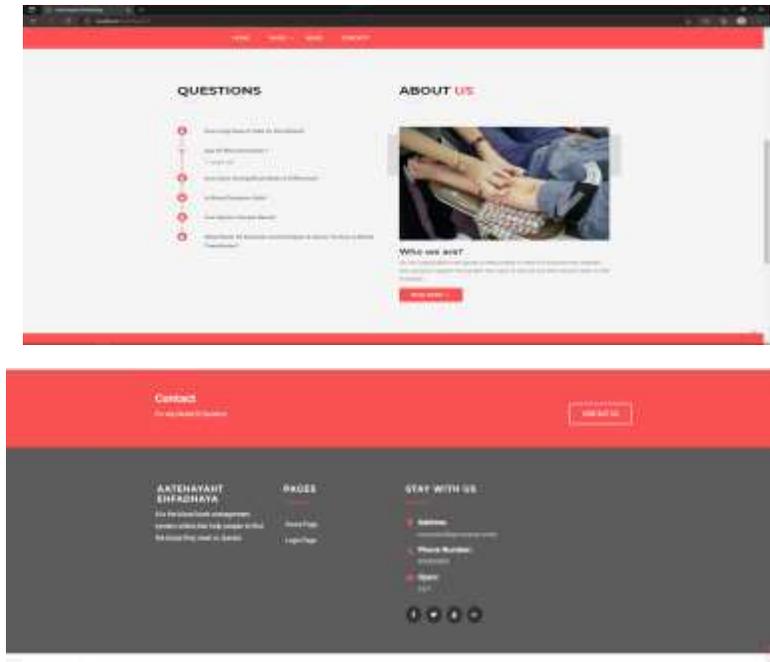


Fig. 3: Screenshot of Home Page

The three images show the home page design and its navigation buttons and the login button for the administration and medical organizations. There are three different buttons for requesting blood, searching blood type and donating. The page also contains some questions about the blood donation process to help the user. There is a summary of the website and its organization, and a footer for contact information and some shortcuts for the user.



Fig. 4: Screenshot of request page

Fig. 4 is the request page, with a form for entering the patient's information: name and contact details, blood group, when the blood is needed and the amount needed in pints. This information is then highlighted as an emergency, and any donor who visits the website can respond to it.



Fig. 5: Screenshot of blood donation page

Fig. 5 is the blood donation with a donor form requesting name, birth date, blood group, weight, location, phone number, last donation date, and email address. The information is saved in a donor information table. When there is an appointment for blood donation, automatic reminders will be sent by phone. More information on blood donation, such as donation forums and events, can be shared through email.



Fig. 6: Screenshot of search page

Fig. 6 is the search page, for queries about blood and location.

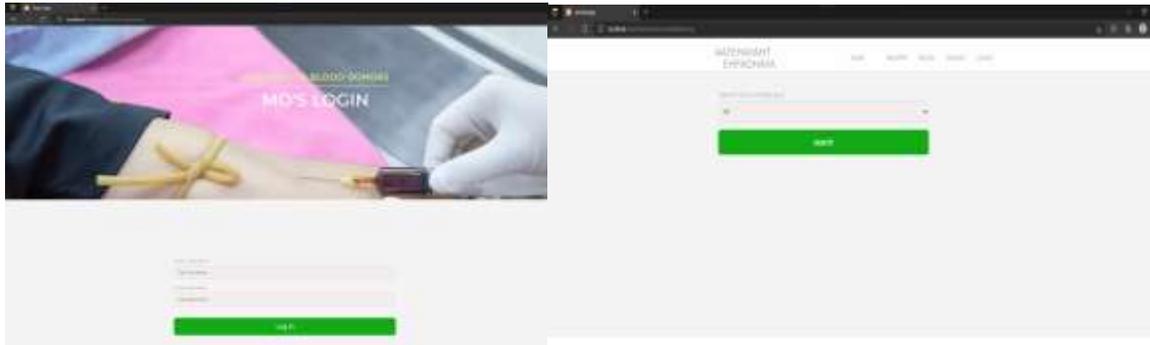


Fig. 7: Screenshot of MO login page and search page

Fig. 7 shows two pages for MOs. The first is the MO login, and the second page enables searching the database by the required blood type.

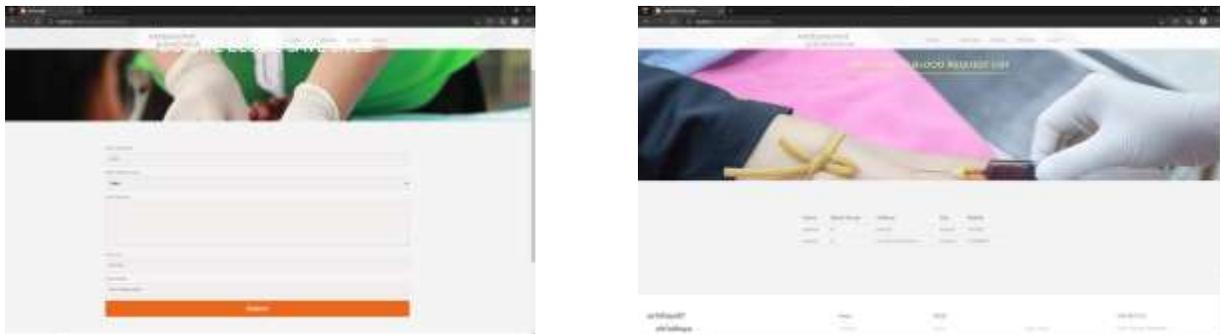


Fig. 8: Screenshot of MO blood page and request list page

Fig. 8 illustrates, first, the request page; if the medical organization cannot find the right type of blood from the website, they can search for someone to donate blood. The second page is the request list, showing users requesting a particular blood type.



Fig. 9: Screenshot of administrator's login page and register of MOs

In Fig. 9, the first page is the login for the administrator to add medical organizations. The second page is the registration form for the medical organization, providing the administrator with the required information.

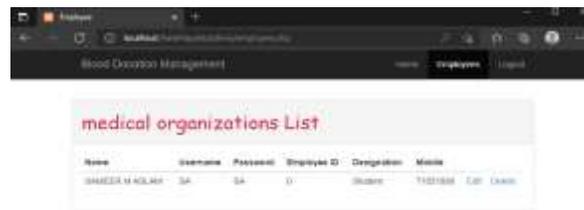


Fig. 10: Screenshot of medical organizations list

Fig. 10 shows the list of medical organizations managed by the administrator. The administrator can update or delete MO profiles, or allow the MO to change the password or user name.

## CONCLUSION

This research focuses on the issue of blood availability when someone requires it urgently, and when someone wishes to donate blood but lacks the necessary information. The blood donation website was built in response to this need to find blood supplies or a willing donor promptly with minimal effort. It should be made available to everyone since it will expedite the search for blood supplies in an emergency, minimizing the risk of health issues and possibly preventing deaths due to blood shortages. The website also makes the process of looking for blood easier and more

automated, as well as keeping a centralized record of blood donors, recipients, blood donation centers, and the availability of blood supplies in hospitals and blood banks.

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