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FACULTY OF ENGINEERING & INFORMATION TECHNOLOGY

DEPARTMENT OF COMPUTER ENGINEERING

GRADUATION PROJECT I



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## **Disclaimer:**

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## **Abstract:**

Medicardia is an all-around complete health care platform that helps its users in their medical wellbeing journey, such that it allows its users to easily manage their medical information, monitor and track chronic conditions like diabetes and hypertension by logging their daily measurements, the app also facilitates communication between patients and doctors through its built-in chat. Moreover, Medicardia allows its users to manage their medication by providing both drug identification and a drug interactions checker.

Furthermore, Medicardia allows doctors to access patients' public emergency information such as allergies and blood type if access is originally given by the patient. Users are also able to book doctor appointment through the app, and receive location-based notifications for urgent blood donation requests in their area.

Through its many features, the Medicardia app was able to successfully achieve its objective by being a user-friendly, secure and effective solution for managing health, and is indeed able to enhance its user's experience while increasing collaboration between the patient and their healthcare provider.

# 1 Introduction

Due to the rapid advancements in health care, it became necessary to integrate technology in these fields, in order to manage patient's medical data, hence resulting in enhancing communication and improvement of the quality of provided healthcare services. While many applications may offer separate solutions for many of the emerging problems, such as health data management or chronic disease monitoring, **Medicardia** emerges as a project that aims to provide an all-around complete platform that unifies these different systems, hence working to ease and simplify the experience for both patients and healthcare providers by utilizing technologies like **Flutter**, **Node.js** and **NoSQL** data bases.

The Medicardia project seeks to develop both web and mobile applications that will allow the user to manage and store their medical information, while simultaneously sharing necessary information with doctors. This platform ensures secure storage and easy access to emergency medical data such as allergies, blood type, and chronic diseases, while ensuring that the user has complete control over who can access this information. Furthermore, patients have the option of booking doctor appointments through the app, as well as directly communicate with their doctor when necessary. Additionally, patients are able to provide feedback on their experience, in turn improving expected healthcare outcomes.

Additionally, Medicardia offers chronic conditions tracking, including glucose levels and blood pressure, with helpful graphs for data visualization. Moreover, Medicardia allows the user to enable blood donation notifications for requests based on the user's location and blood type. Doctors can also access their patient's private data if access is given by the user.

Through collecting medical data in one location, Medicardia contributes to reducing organizing efforts, as well as easing management and monitoring of chronic diseases. Furthermore, improving communication between patients and doctors results in faster and more accurate response in emergency situations. Improving communication and data organization allows the user to be more involved in their healthcare journey through Medicardia's user friendly interface.

This report starts off with an introduction, then it showcases the restrictions and challenges that must be overcome, this is then followed by the used methodologies and a literature review that explores the current context for this project. The used methodology includes the methods, development process, and the tools used. This is followed by results and results analysis section including data interpretation and comparisons on predefined criteria. Finally, the project concludes with a summary of the main outcomes and proposes potential future directions.

## **2 Constraints, Standards, and earlier course work**

### **2.1 Constraints**

#### **2.1.1 Intuitive design**

Due to the large number of features that Medicardia provides, it is imperative that the application maintains a design that is easy for the user to understand and operate

#### **2.1.2 Privacy**

Since user health data is a sensitive subject, Medicardia must only provide health data to healthcare providers with the user's consent.

#### **2.1.3 Cost**

The project cost must remain within budget.

#### **2.1.4 Consistency between web and application**

Medicardia must maintain its tabs, features, and usage process between the web browser and phone application, hence languages that operate on both are highly preferred.

## **2.2 Standards**

### **1. Agile Development Practices**

Agile methodologies were adopted to create early versions of the application, allowing for continuous maintenance, easy bug detection, and seamless addition of new features.

### **2. Version Control with GitHub**

We used GitHub to upload the project to it, which facilitated communication between us through pushes and pulls. And saving versions of the application, which facilitates the process of returning to any version in the event of a problem in the current version. We also used GitHub to get some resources to use in the app.

### **3. Data Security Standards**

Passwords are encrypted using bcrypt, ensuring protection of user credentials. The Joi library was also used for input validation, ensuring the integrity of user inputs and minimizing errors.

### **4. Code Structure with MVC Pattern**

The application is organized using the Model-Controller-View (MVC) design pattern, ensuring a clear separation of concerns and facilitating easier maintenance.

## **2.3 Earlier course work**

University courses have led to different aspects of the learning process. A strong knowledge base that's very important in building EngTrack. Technical specialization in engineering projects, website design and development, and database management is very useful. Offered me an overview of building a user interface, and developing the design of the system. That was very important as a way to master different technologies like Flatter. Development of the front line and development of the node for backward development. Our studies are in this kind of field. You have given us the capacity that can only help us, when it comes to addressing a variety of the requirements of our project.

## 2 Literature review

The use of technology in the field of healthcare has caused a revolution in the way medical data is managed, accessed, and shared. The main issues healthcare applications set out to solve include the need to collect complete patient data, and improve communication between patients and doctors, as well as ease chronic disease monitoring. This literature review handles modern improvements in this field, while showcasing applications that improve medical history data management, and improve communication between doctors and patients.

To start off, **Apple health** is considered one of the major health and monitoring applications. According to a study published in JMIR mHealth and uHealth journal (Buis, 2024), early users of Apple Health Records showcased great satisfaction regarding the easiness of managing their medical information and sharing them with their health providers when necessary.

Besides Apple Health, chronic disease management applications such as **my Sugr – Diabetes Tracker** provide tools that allow its users to monitor specific health conditions such as diabetes and hypertension. Nevertheless, these applications lack interaction and integration with doctors, limiting their effectiveness in supporting the patients in the long term.

Medicardia takes into account the previous experience and tries of these platforms to provide features that satisfy both patient and doctor needs. This application is based on technologies such as **NoSQL**, **Node.js**, and **Flutter**, allowing it to be a complete platform that simplifies interaction between patients and doctors while keeping its users privacy as its first priority.

Moreover, Medicardia provides a medical information management system that includes storing emergency information such as allergies and blood type, while also allowing the user to define who has access to this information. A study by Hamine (Hamine, 2015) greatly highlights the effectiveness of using such tools in improving treatment outcomes for chronic disease patients.

Additionally, Medicardia allows patients to track their glucose and blood pressure, allowing its users to monitor their health state daily with helpful graphs. This data can be sent to the user's doctor when necessary if permission is given.

To conclude, Medicardia represents an advancement in the field of health care applications through merging a large scale of features into a single application. Including but not limited to accessing emergency information through ID number, communication with doctors, blood donation notifications, chronic disease monitoring, and checking medication interaction, as well as scheduling doctor appointments through the app. Through these features, Medicardia is able to provide a comprehensive solution that meets both the needs of patients and healthcare providers.

## **4 Methodology**

### **4.1 Development Tools and Technologies**

#### **4.1.1 Tools**

- Visual Studio Code: Used as the front-end and back-end development environment, providing an integrated environment for code editing and project management.
- Firebase: Utilized to create notifications and messages.
- Android Studio: Used as an emulator to test the mobile application on various virtual devices, ensuring compatibility and smooth functionality.
- GitHub: Utilized for file sharing, enabling collaborative version control and efficient management of codebase changes across the team.
- Postman: Employed as an API interface tool, facilitating easy HTTP request execution and response handling. It played a crucial role in developing functionalities and effectively testing variations in a structured manner.
- MongoDB Compass: Used as an interface for MongoDB, making it easy to visualize and manage our data. It helped us inspect schemas, understand relationships between collections, and fine-tune the database structure to ensure everything ran smoothly.

#### **4.1.2 Programming Languages and Frameworks**

When deciding on what technology to use while developing Medicardia, we selected Flutter because of its robust platform that offers the ability to build for mobile IOS and Android, web, and desktop platforms with the same code. For backend development, Node.js was chosen for the reason that it is well suited for the management and control of asynchronous activities, which are fundamental in engineering spectacular and scalable web applications.

#### **4.1.3 Database Design and Management**

Choosing the NoSQL database (MongoDatabase) for our project was a decision based on several factors. NoSQL has an excellent ability to store diverse data, but without the need for prior structuring. It is easier to handle in all aspects.

It is also characterized by the ability to easily expand horizontally, which facilitates the addition of new resources to process the increase in the volume of data and the number of data. Users without significant impact on performance. Because it is simple and the structure is simple, it makes the user experience quick in accessing data and its instant updates, making it the ideal choice for a project that requires dealing with a large variety of data and maintaining

excellent performance at the same time. We leverage Firebase effectively to store notifications, messages, and permission request for patient private data.

#### 4.1.4 Database Design and Management

##### Database Tables:

- **Users Table:** This table stores patient data, including personal information and medical details, both public and private.
- **Doctors Table:** This table contains doctor data, such as name, email, specialization, license number, profile image, and a hashed password.
- **Doctor-Patient Relations Table:** This table links patients to doctors who have access to their data by storing both the patient's user ID and the doctor's ID. It tracks which doctors have access to the patient's private information.
- **Drugs Table:** This table stores information about drugs, including the drug name, barcode, and details such as its use, dosage, and timing.
- **Hospitals Table:** This table contains hospital names and locations. It is used when a donation request is sent.
- **Doctor Schedules Table:** This table holds doctors' working schedules, including the days and available time slots. Each slot has a status (available, booked, canceled).
- Appointments Table: This table stores appointments, including the booked time slot, date, patient ID, doctor ID and any patient notes.
- **Blood Sugars Table:** This table tracks blood sugar readings for users who use the diabetes tracking feature. For each user, it stores the reading value, date and time, the measurement type (before or after meal), and the status (high, normal, or low).
- **Pressures Table:** This table stores systolic and diastolic blood pressure readings for users who track their blood pressure. It records the user ID, systolic and diastolic values, and the reading date and time.
- **Donation Requests Table:** This table stores donation requests, including blood type, number of units needed, the doctor's ID who sent the request, and the hospital's ID the doctor entered for the request. It also stores the patient IDs that match the donation requirements.
- **Reviews Table:** This table stores reviews about doctors, including the doctor's ID, patient's ID, the review content, and the rating.
- The chat, notification and permission Request data were stored in Firebase.

#### 4.1.5 External APIs

We used two external APIs for the drug interaction checker. One API retrieves the drug name, while the other checks for interactions and provides detailed information about them.

## 4.2 Mobile application

Our application includes 3 types of users: Admin, Doctor, and Patient.

When the user enters our application using a mobile, these screens will appear:

### 4.2.1 Splash screen

When the user opens our application, splash screen as shown in Figure 1 will appear. If the user has an account, he can click on **Log In** button, but if he does not have an account, he can click on **Sign Up** button and create a new account.

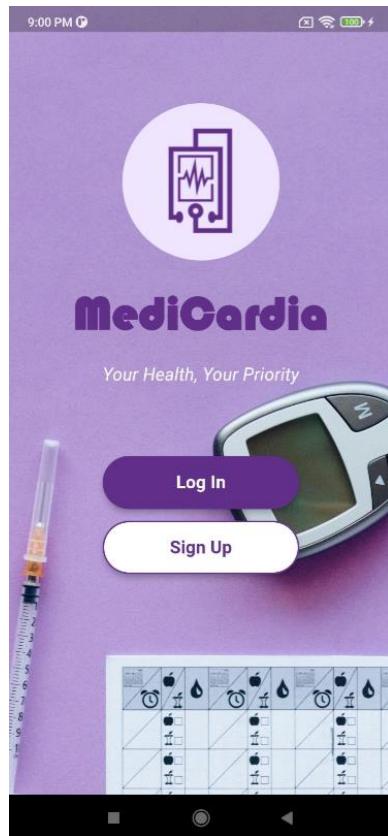


Figure 1:Splash Screen

#### 4.2.2 Login & Signup Screens

When the user clicks on **Sign Up** button, screen as shown in Figure 2 will appear, through which he can choose whether he wants to create a patient or doctor account.

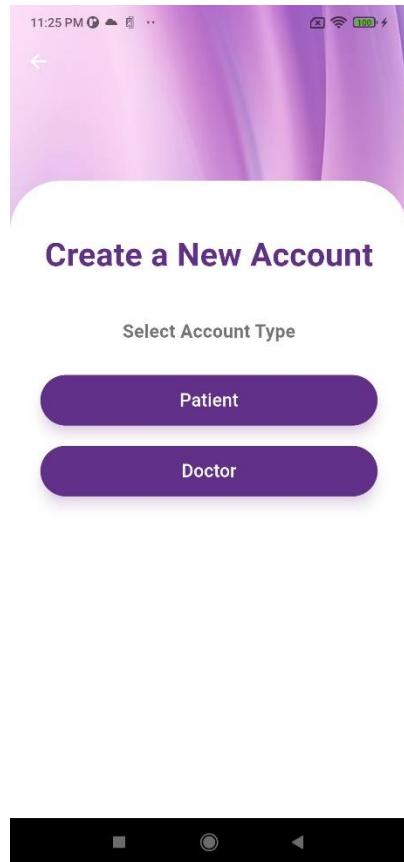


Figure 2: Select Account Screen

### 4.2.3 Sign Up Screens

When the user selects a patient, screen in Figure 5 will appear. We also made a validation so that the patient must fill in all the required fields, as well as write the email in the correct format and choose a password of no less than 6 characters.

This screenshot shows the patient sign-up screen at 11:25 PM. The interface includes fields for Full Name, Email, Location, and Password, each with a placeholder icon. A checkbox for agreeing to data processing is checked, and a large purple 'Create Account' button is at the bottom.

Full Name

Email

Location

Password

I agree to the processing of personal data

Create Account

This screenshot shows the patient sign-up screen at 10:10 PM. All input fields (Full Name, Email, Location, Password) are empty, and their respective validation error messages are displayed below them.

Please enter Full name

Please enter Email

Please enter a location

Please enter password

I agree to the processing of personal data

This screenshot shows the patient sign-up screen at 10:16 PM. The 'Email' field contains an invalid email address ('mlak34@gmail'), and the 'Password' field is too short ('....'). Validation errors are shown for both fields.

Full Name

Email

Location

Password

I agree to the processing of personal data

Create Account

Figure 5: Patient Signup Screen

Figure 4: All fields are empty

Figure 3: Enter wrong email format, and password less than 6 characters

After the patient enters the data correctly, a verify email screen will appear to confirm the email. You will see that a code consisting of 4-digit email verification code is sent to the patient's email, and he must enter it on the verification code screen then click on **Verify** button as shown in Figure 6.



Figure 7: Correct data for patient signup

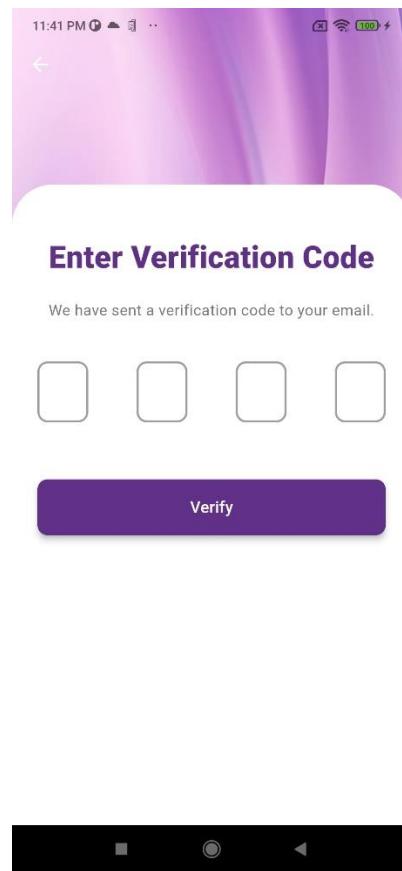


Figure 6: Verification code screen

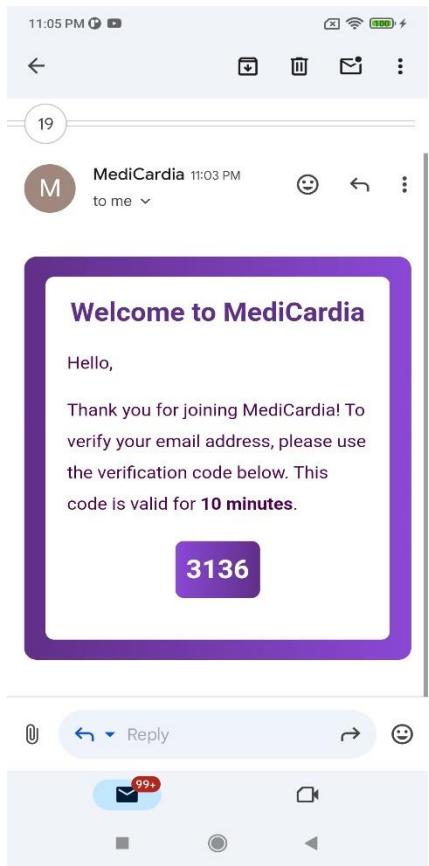


Figure 8: Verify email on Gmail

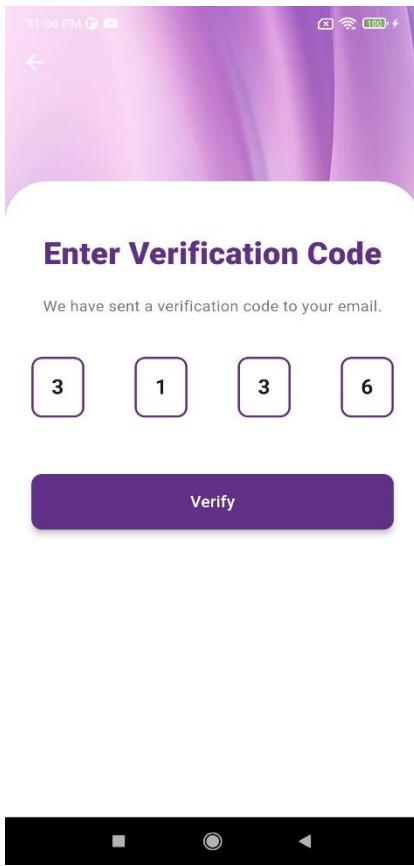


Figure 9: Fill code in verification code screen

After the sign-up is completed successfully, the public information screen as shown in Figure 10 will appear, and everyone can access the entered information. Through this page, the patient can add a profile photo and a section to add personal information such as ID number, age, gender, and phone number. All fields must be entered in this section, and another section to add medical information such as blood type (a required field), chronic diseases, allergies, add drugs used by the patient, and the last blood donation date, then click on **Submit** button in Figure 13.

Figure 10: Public patient information screen

The patient can add his drugs by writing the name of the drug or through click on this icon he can scan the barcode of the drug and the name of the drug will be automatically filled in the drug name field or write drug name manually. Then the patient determines whether the drug type is used for a temporary or permanent period. If it is temporary, the start and end dates of its use are entered as shown in Figure 12, then the **Add Drug** button as shown in Figure 11 & Figure 12 is pressed so that the entered drug is saved.

**Add Drugs**

Drug Name

Drug Type

**Add Drug**

Figure 11: Add permanent drug

**Add Drugs**

Drug Name

Drug Type

Start Date

End Date

**Add Drug**

Figure 12: Add temporary drug



Figure 14: Scan barcode for drug

11:50 PM

**Public Information**

Mlak

Your MediCard public information  
Please fill it,  
you should know that every doctor can see this.

Drug Name

Drug Type

Start Date

End Date

**Add Drug**

Last Donation Date

**Submit**

Figure 13: Add profile photo, and last blood donation date

After pressing the **Submit** button, the private medical information screen as shown in Figure 15 appears. Filling in this information is optional and only personal doctors will have access to this information or approval of a request for permission to access this information. Through this screen, the patient can enter record of the medical history, medical examinations, medical notes and treatment plans. If the patient does not want to add this information, he can press the **Next** button and he will go to the login screen.

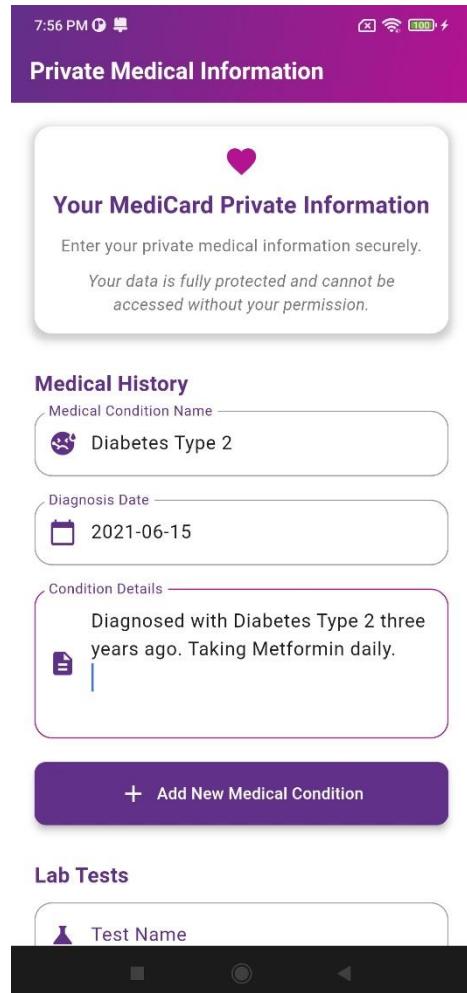


Figure 15: Private patient information screen

**Lab Tests**

Test Name —  HbA1c Test

Test Result —  7.5%

Test Date —  2023-11-13

**+ Add New LabTest**

Figure 16: Add lab test example

**Medical Notes**

Medical Notes —  The doctor advised me to follow a low-carb diet and exercise daily

**+ Add New Medical Note**

Figure 17: Add medical note example

**Treatment Plans**

Prescribed Medications —  Metformin 500mg, Lisinopril 10mg

Treatment Duration —  6 months

Treatment Goals —  Reduce HbA1c to below 6.5% and stabilize blood pressure

Additional Notes —  Practicing yoga and meditation for stress management

**+ Add New Treatment Plan**

**Next**

Figure 18: Add treatment plan example

When the user selects type sign-up as doctor, the screen in Figure 19 will appear.

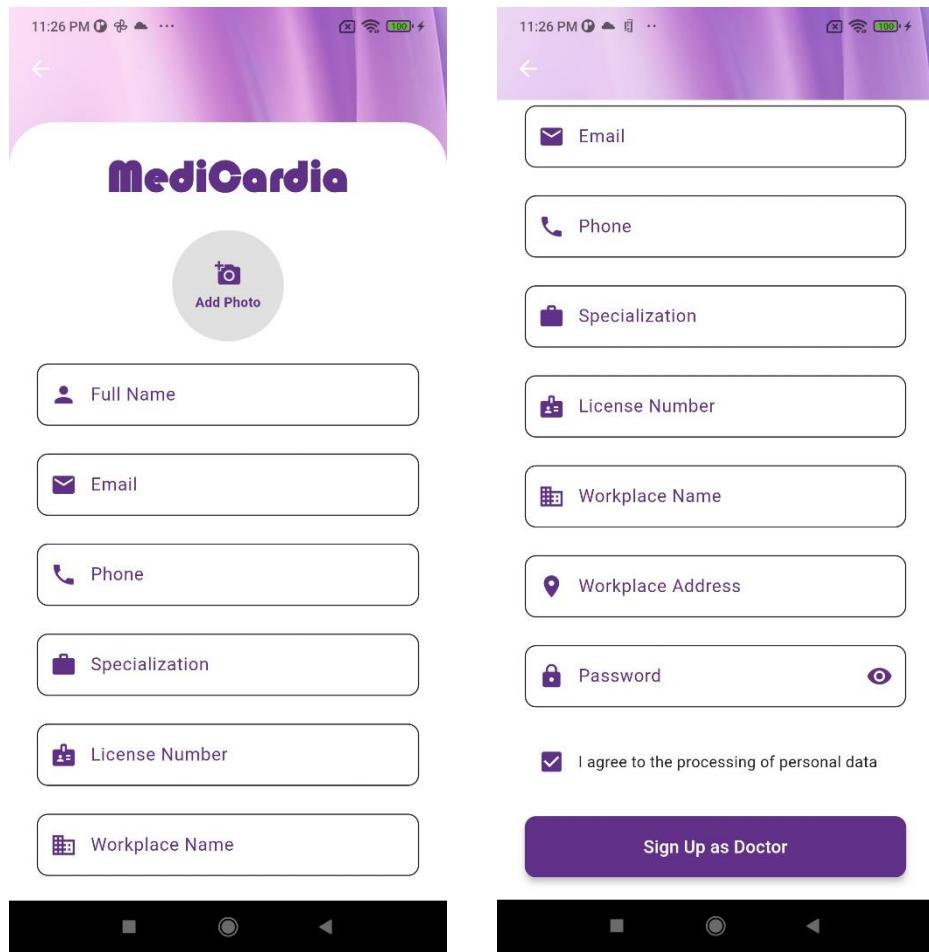


Figure 19: Doctor signup screen

We also made a validation so that the doctor must fill in all fields, as well as write the email in the correct format, enter valid phone number, enter valid license number with exactly 8 digits, and choose a password of no less than 6 characters.

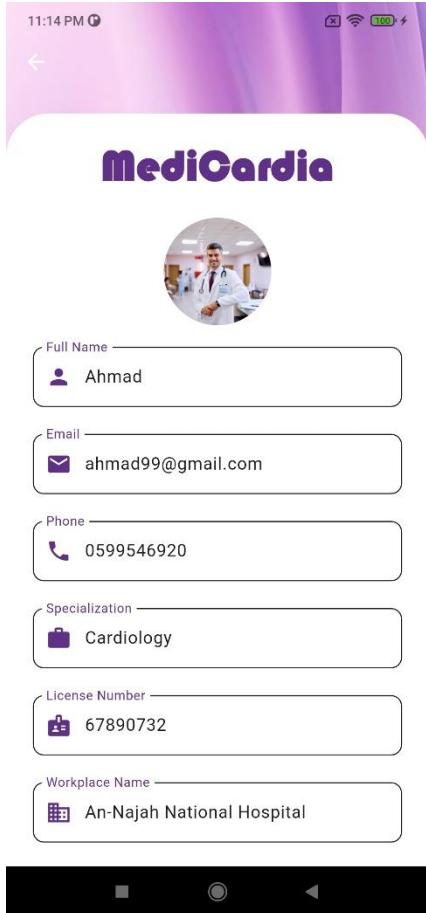
The screenshot shows a mobile application interface for entering doctor information. The screen includes a header with time (10:59 PM), signal strength, battery level (100%), and a back arrow icon. Below the header are several input fields with validation messages:

- Full Name**: Shows "Ahmad" with a person icon.
- Email**: Shows "ahmad99@gmail" with an envelope icon. A red error message below it says "Please enter a valid Email".
- Phone**: Shows "0599546" with a phone receiver icon. A red error message below it says "Please enter a valid Phone number".
- Specialization**: Shows "Cardiology" with a briefcase icon.
- License Number**: Shows "1234" with a key icon. A red error message below it says "License Number must be exactly 8 digits".
- Workplace Name**: Shows "An-Najah National Hospital" with a building icon.
- Workplace Address**: Shows "An-Najah Street, Nablus, Palestine" with a location pin icon.
- Password**: Shows a masked password "...." with a lock icon. A red error message below it says "Password must be at least 6 characters long".

At the bottom of the screen are three navigation icons: a square, a circle, and a triangle.

Figure 20: Validate doctor data

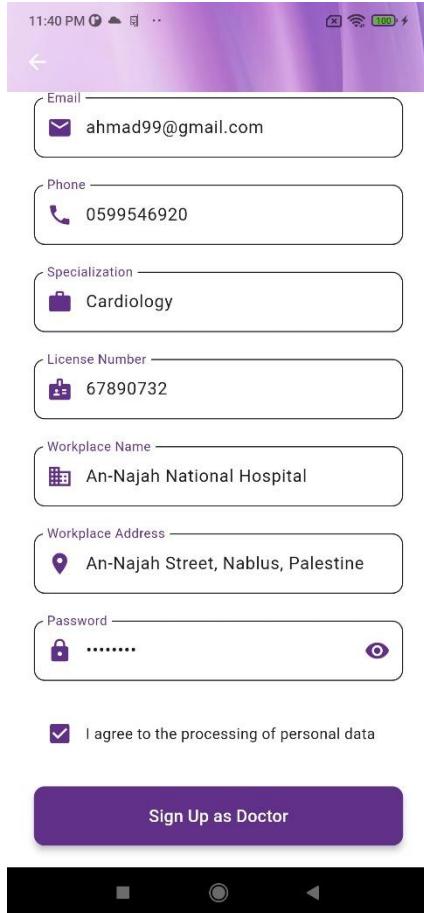
After the doctor enters the data correctly, a verify email screen will appear to confirm the email. You will see that a code consisting of 4-digit email verification code is sent to the doctor's email like in Figure 8, and he must enter it on the verification code screen like in Figure 9. Also allow show password after write it when click on this icon 



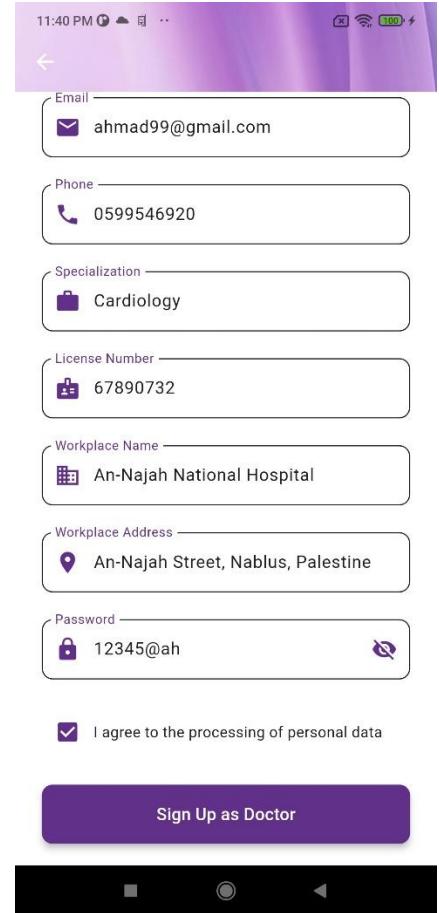
The screenshot shows the MediCardia app interface for doctor sign-up. The form fields are filled with the following information:

- Full Name: Ahmad
- Email: ahmad99@gmail.com
- Phone: 0599546920
- Specialization: Cardiology
- License Number: 67890732
- Workplace Name: An-Najah National Hospital
- Workplace Address: An-Najah Street, Nablus, Palestine
- Password: (obscured)
- I agree to the processing of personal data: checked

Figure 22: Correct data for doctor signup



This screenshot shows the same sign-up form as Figure 22, but with a notable difference: the password field is no longer obscured by dots. Instead, it displays the password "12345@ah". The rest of the form fields and their values are identical to Figure 22.



This screenshot shows the sign-up form with the password field visible ("12345@ah") and a checkmark in the "Show password" checkbox. The other form fields and their values remain the same as in the previous screenshots.

Figure 21: Show password

#### 4.2.4 Log In screen:

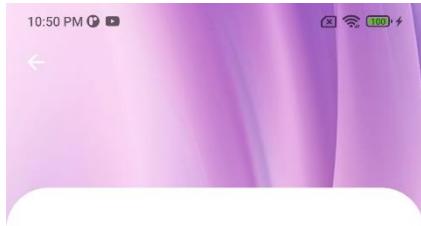
The user must enter the correct email and password, then click in **Log In** button.



Figure 23: Login screen



Figure 24: Validate login fields



10:50 PM

←

MediCardia

Email —  
✉ lana@gmail.com

Password —  
🔒 ..... ⚡

Forget password?

Log In

Don't have an account? [Sign Up](#)

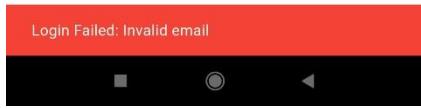


Figure 26: Enter invalid email

12:15 PM

←

MediCardia

Email —  
✉ mlak34@gmail.com

Password —  
🔒 ..... ⚡

Forget password?

Log In

Don't have an account? [Sign Up](#)



Figure 25: Enter wrong password

#### 4.2.5 Forget password

When the user enters the email and clicks on **Forget password?**

A forget password screen as shown in Figure 27 will appear to enter the user's email, then click on **Send** button. After that, a 4-digit password reset verification code will be sent to the entered email and a verification code screen will appear to enter the code sent to the email as shown in Figure 9. After that, update password screen will appear with validation that the password is match to the password confirmation, and click on **Update Password** button as shown in Figure 31. After that, the user's password is updated.

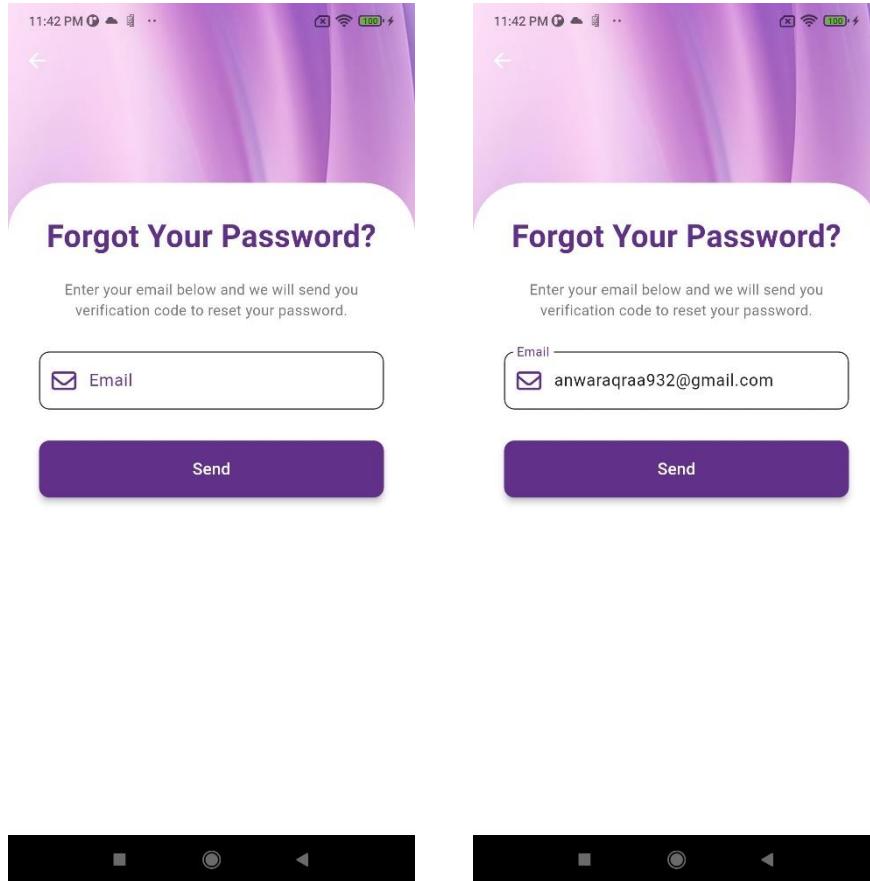


Figure 27: Forget password screen

Figure 28: Enter user email

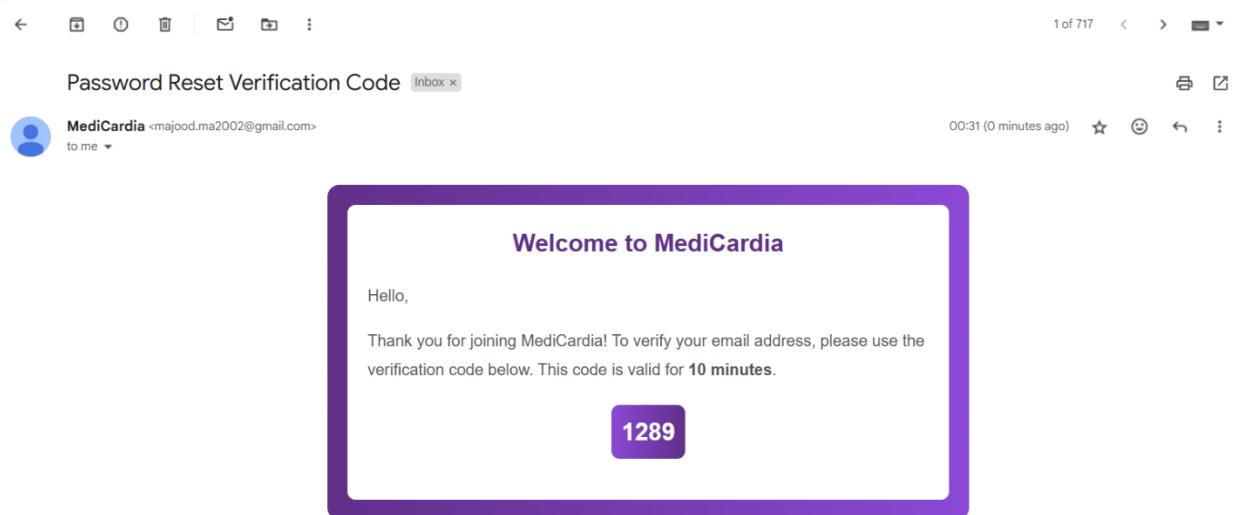


Figure 29: Password reset code on Gmail

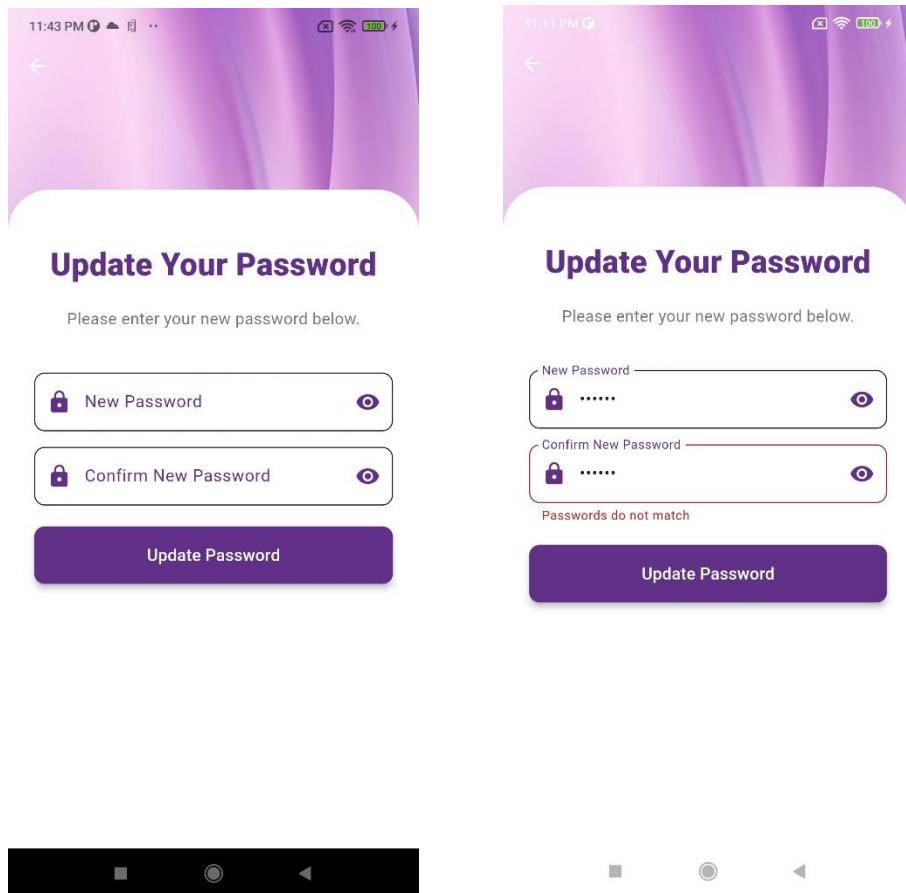


Figure 31: Update password screen

Figure 30: Passwords do not match

#### 4.2.5 Patient home:

When the patient enters the application, the patient's home page as shown in Figure 33 will appear, at the top of which an animated welcome sentence will appear.

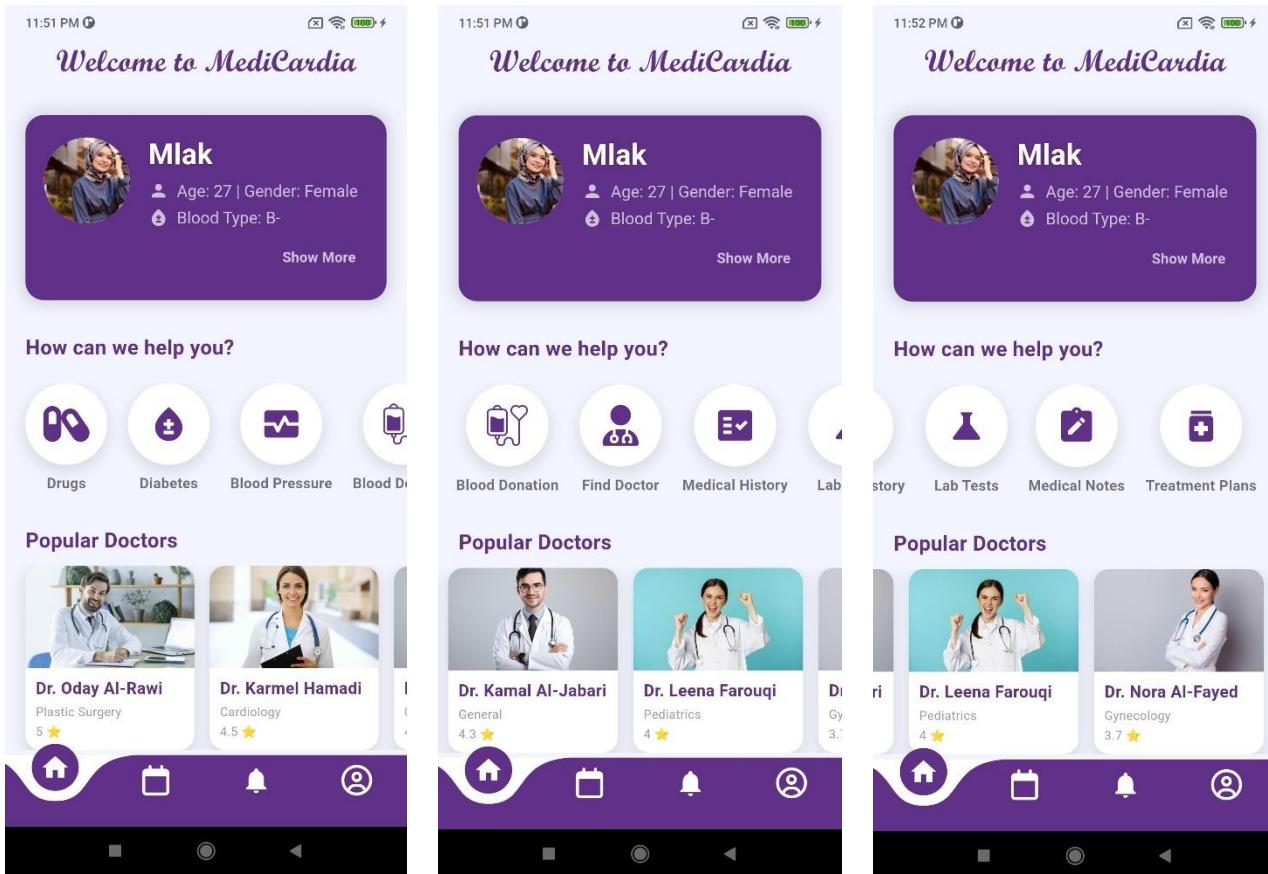


Figure 32: Patient home screen

Then, a patient's card appears, containing his profile photo, name, age, gender, and blood type. If we click on "Show more", his ID number and the chronic diseases he entered will appear, with the possibility of deleting by click on or adding diseases by click on and the same applies to allergies.

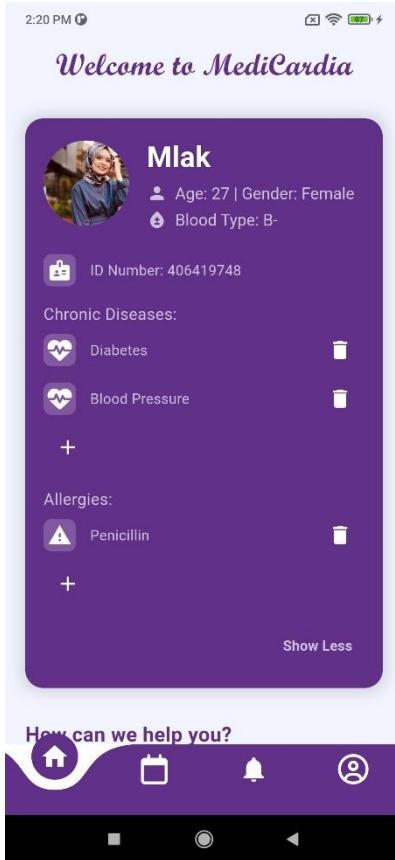


Figure 35: Patient card

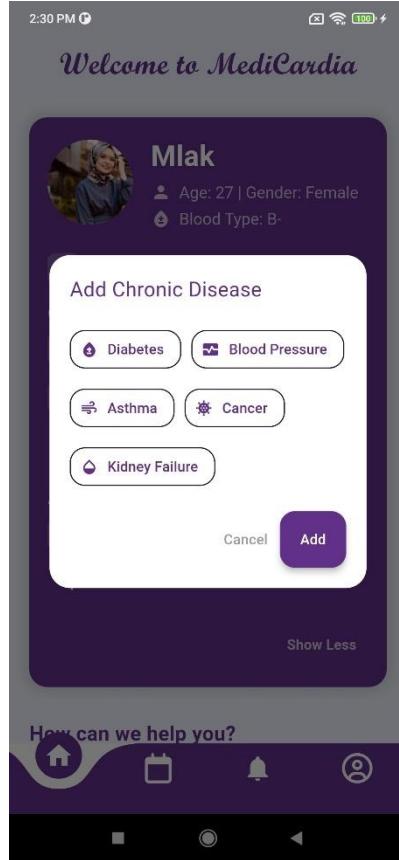


Figure 33: Add new chronic disease

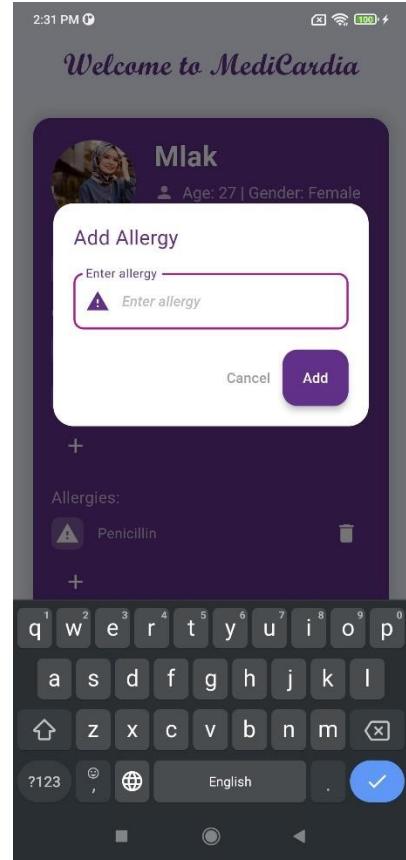
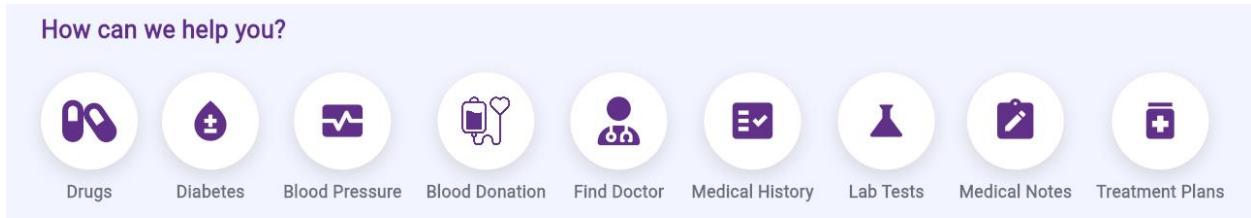


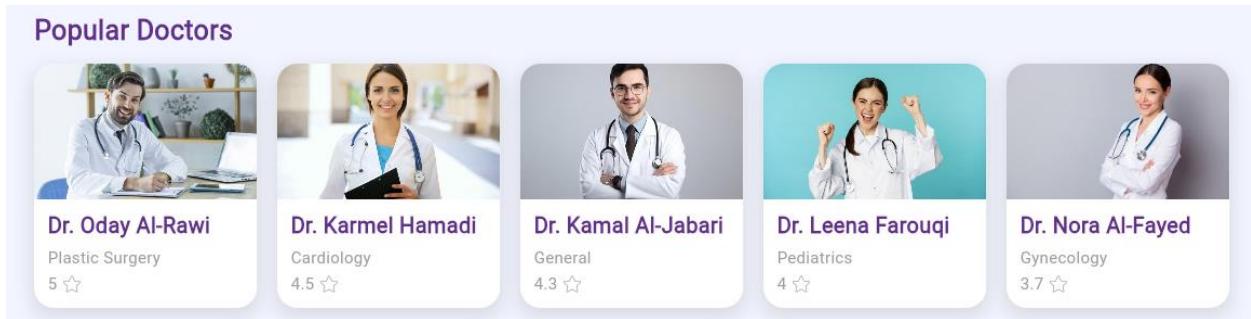
Figure 34: Add new allergy

Then, a section appears, “**How can we help you?**” which contains the services that our application provides to the patient, such as drugs, chronic diseases, whether blood pressure or diabetes or both if the patient has them, blood donation, finding a doctor, and the patient’s private health information, which is medical history, lab tests, medical notes, and treatment plans.



*Figure 36: Services for the patient*

Then the popular doctors section appears, which are the top 5 doctors who have received the highest rating from their patients in our application.



*Figure 37: Popular doctors*

And the bottom navigation bar that allows the patient to navigate to the patient’s home, calendar, notifications, or profile.



*Figure 38: Bottom navigation bar*

## **Drugs:**

Now we will explain our services provided to the patient.

We will start with the drugs.



Drugs

When the patient clicks on the drugs icon in home page in Figure 32, the medicine hub screen as shown in Figure 39 will appear, which contains a section for searching for drugs and a section for displaying our drug services, which are your drugs, drug interactions checker, and displaying drug details by scanning the barcode.

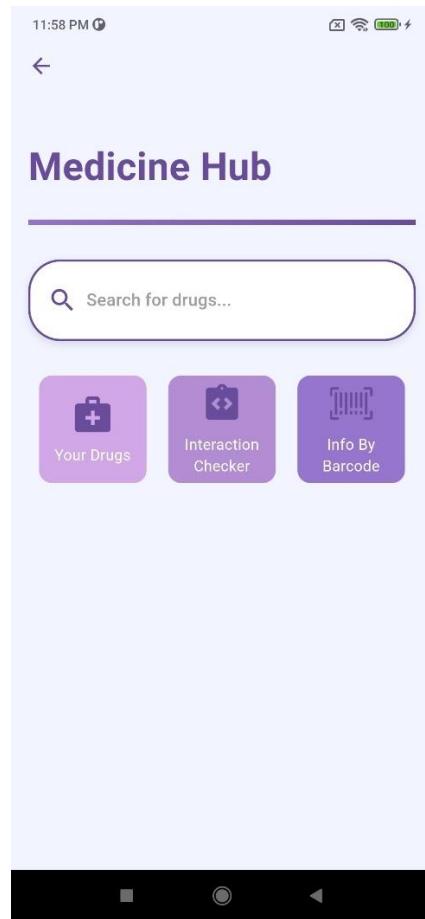


Figure 39: Medicine hub screen

The Section for searching for drugs with the possibility of showing suggestions for drugs that contain the entered letters.

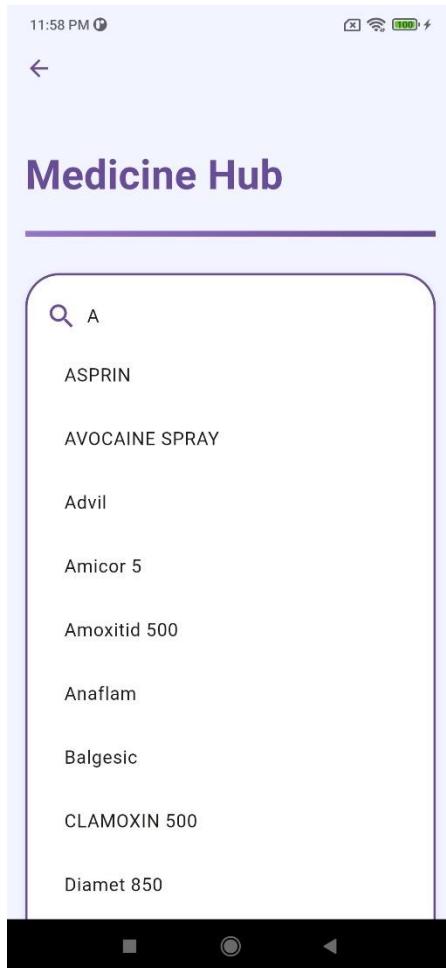


Figure 40: Show suggestions when searching for a drug



Figure 41: Display the use and dose of the drug you are looking for

When the patient clicks on your drugs.



The medicines page will appear, which shows a list of the patient's drugs, a **Not Used** label that appears when the temporary drug period has expired, and the ability to search for drugs, delete drugs, add new drugs, or **View Details** of a specific drug from his drugs.

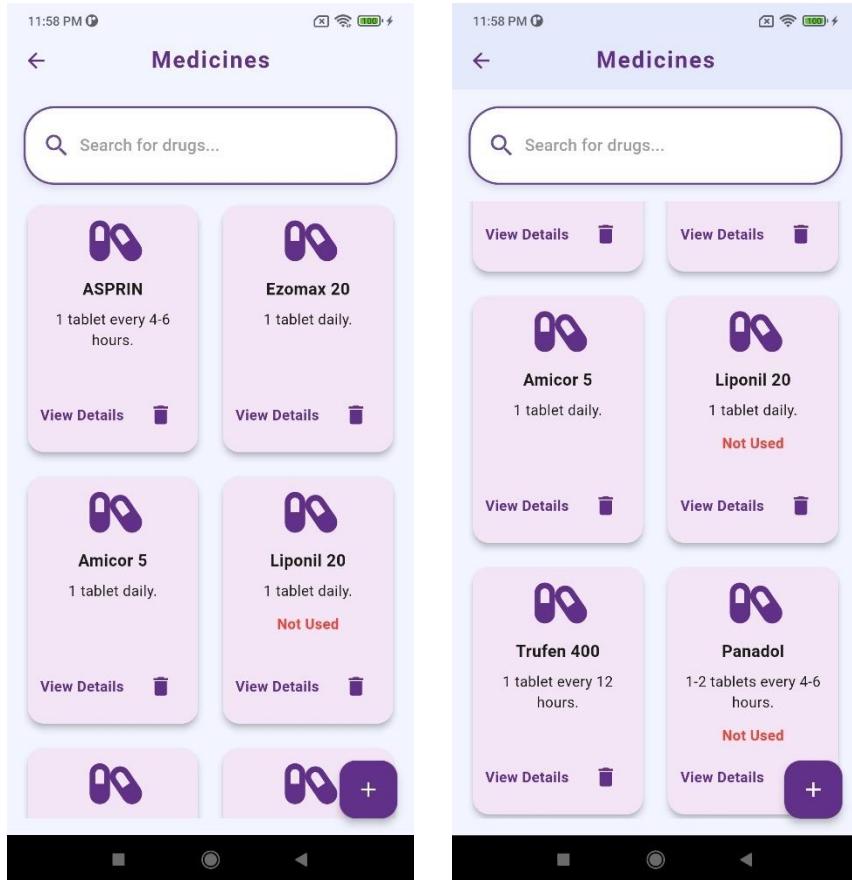


Figure 42: Show patient's drugs

When the patient searches for drug name, suggestions for drug names that contain the letter entered in the search field will appear.

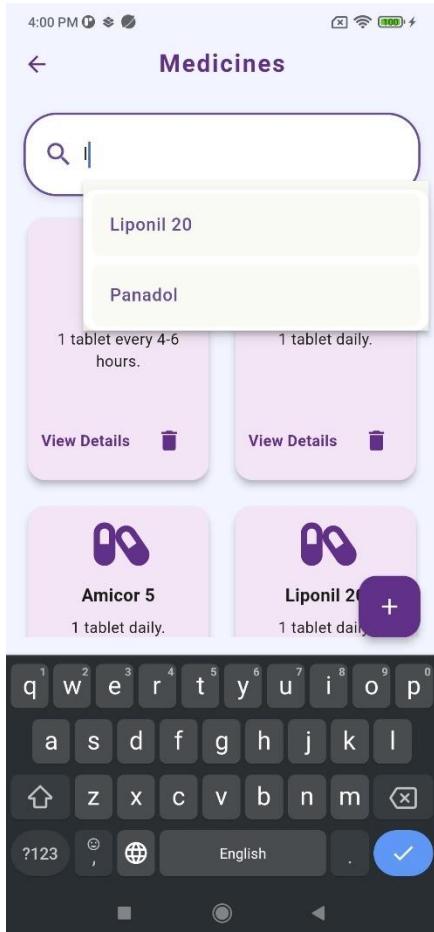


Figure 43: The patient is search for one of his drugs

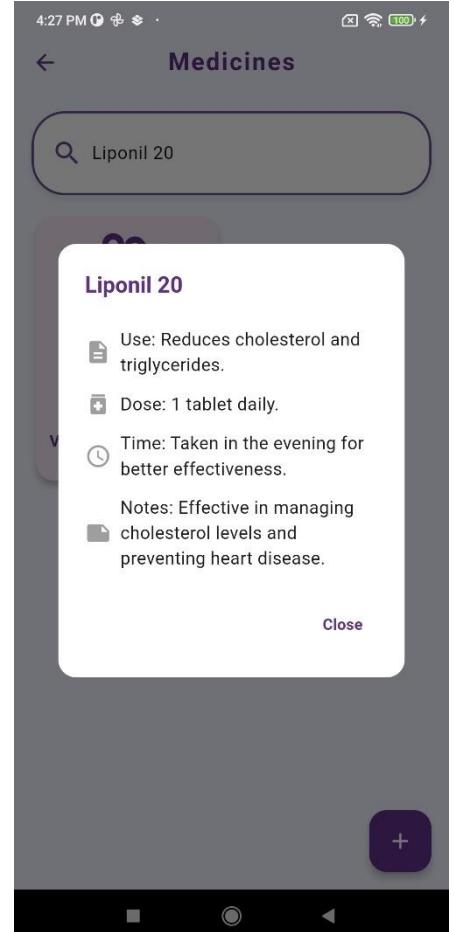
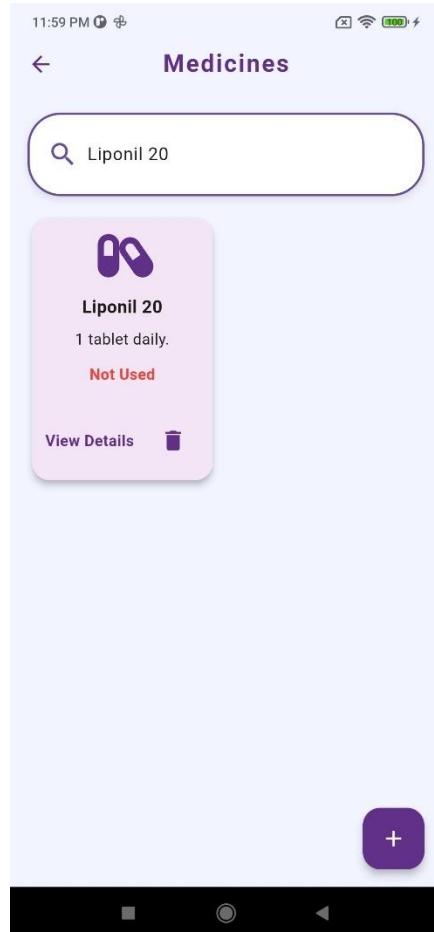


Figure 44: View details for drug

Through the add icon, 

the patient can add a temporary or permanent drug.

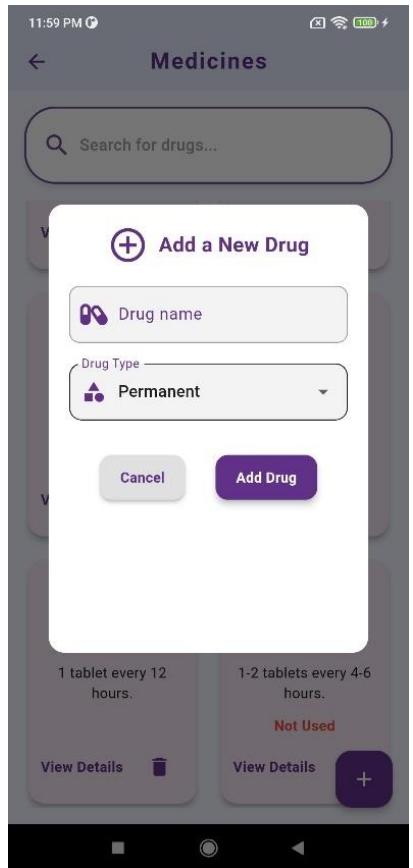


Figure 46: Add new permanent drug

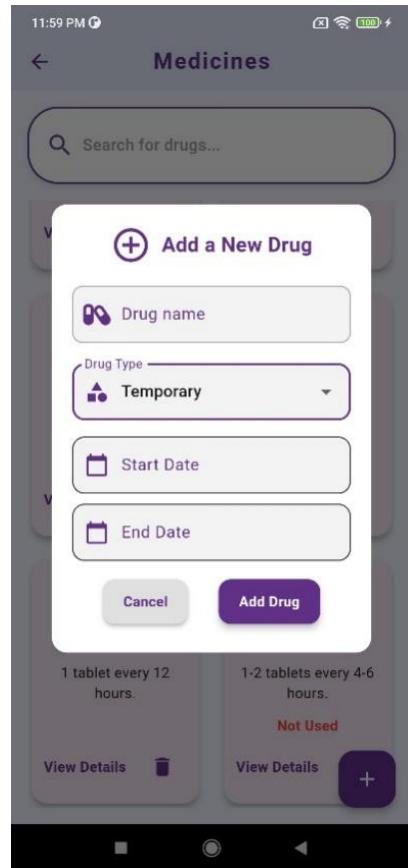


Figure 45: Add new temporary drug

When the patient clicks on Interaction Checker.



The drugs interaction checker page as shown in Figure 49 will appear, through which the patient enters the name of the drugs, whether two or more, by entering the name of the drug, then pressing the **Add Drug** button, then adding the second drug in the same way, and so on, to check if there is an interaction between the entered drugs and see details of interaction if interaction found, with the possibility of deleting all the entered drugs by clicking on **Clear All** or deleting a specific drug by clicking on this icon

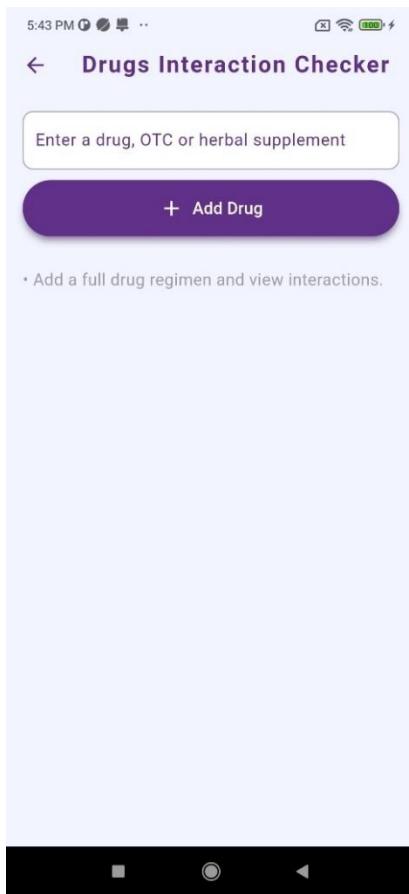


Figure 49: Drugs interaction checker screen

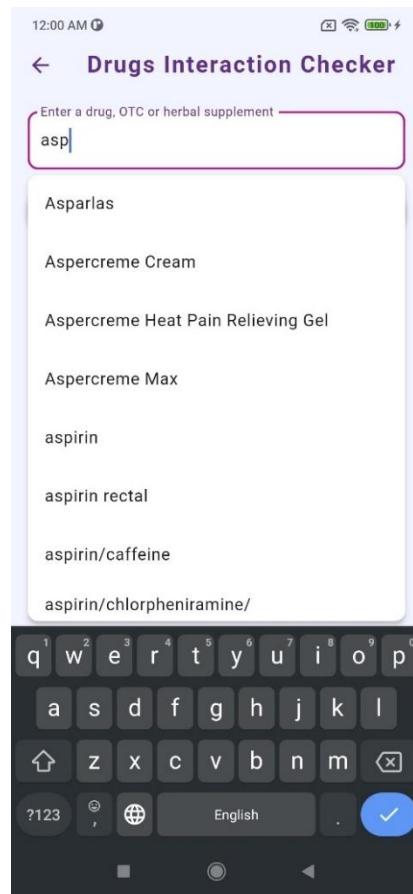


Figure 47: View suggestions while entering the drug name

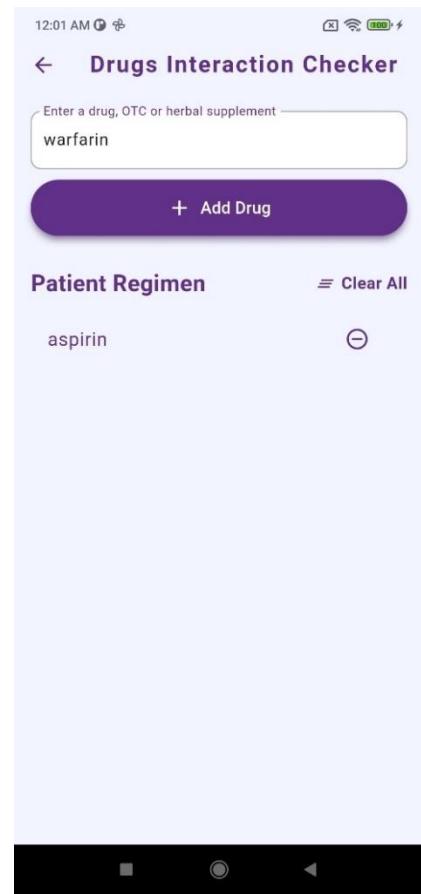


Figure 48: Added drugs to check

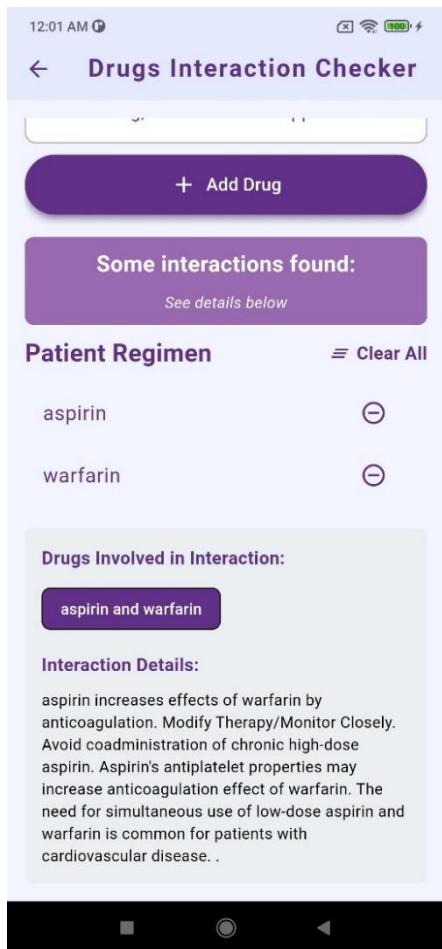


Figure 52: Two-drug interaction check

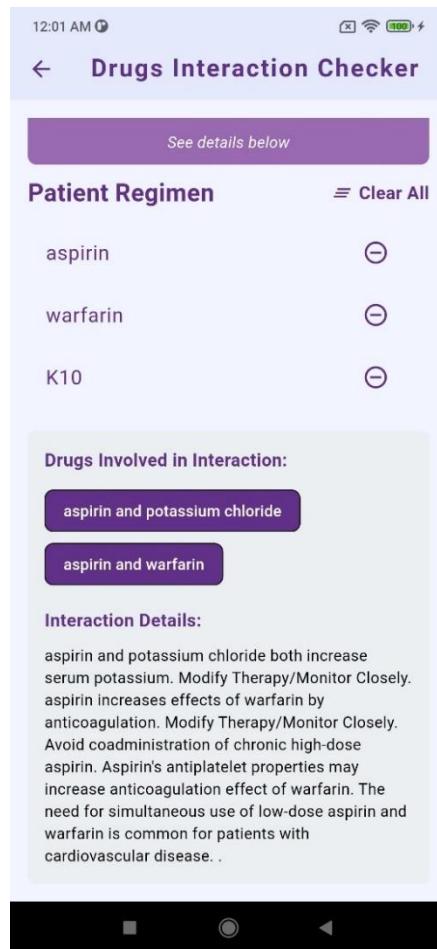


Figure 51: Three-drug interaction check

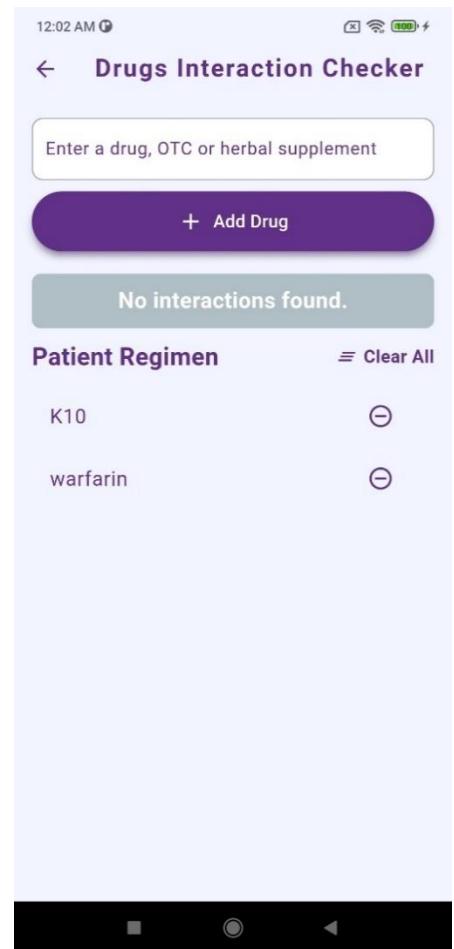
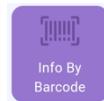


Figure 50: Example of no interactions found

When the patient clicks on the Info by Barcode.



The barcode scanner page as shown in Figure 55 will appear, which allows the patient to scan the barcode on the drug packet and display the drug details by clicking on the barcode icon.

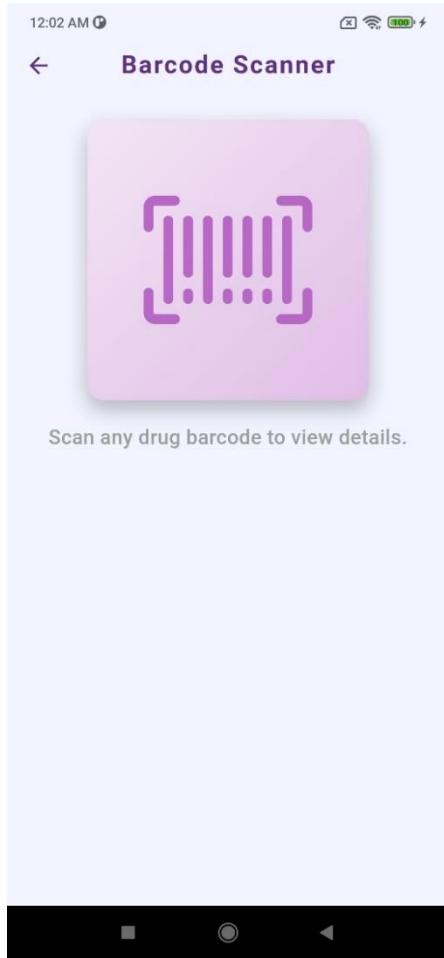


Figure 55: Barcode scanner screen

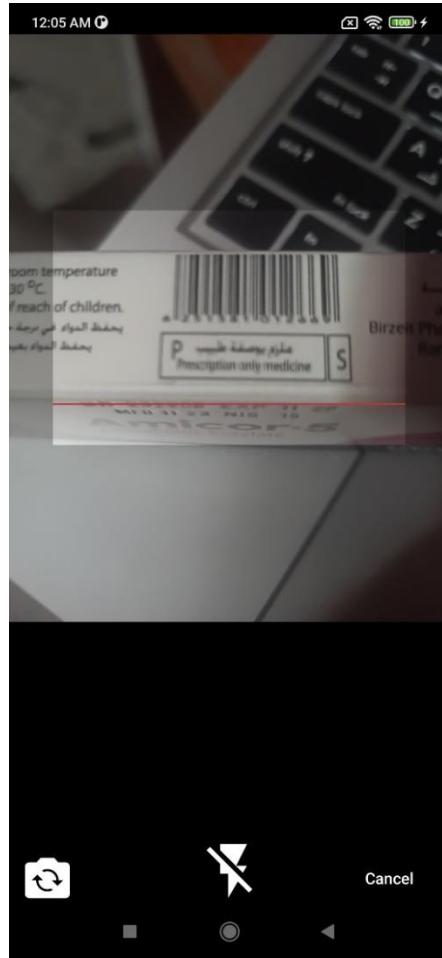


Figure 53: Scan drug barcode

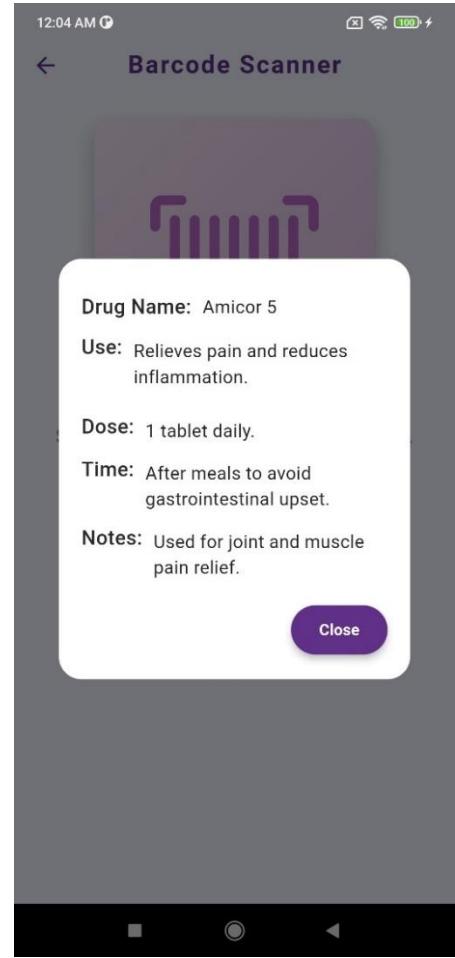


Figure 54: View drug details

## Diabetes:

Let's go to another patient service, which is Diabetes.



When the patient clicks on the Diabetes icon on the home page (as shown in Figure 32), the Diabetes Tracking screen will appear.



Figure 56: Diabetes tracking screen

It consists of four sections:

### 1. Glucose Log:



When clicked, it displays detailed readings for today, the week, and the month.

Each view shows a bar chart of the readings and indicates whether the average is high, normal, or low.

- **Today, Chart:**

Displays the time and value of each reading for the current day.

- **Week Chart:**

Shows the average readings for the last 7 days, with the days of the week on the x-axis and the average values on the y-axis.

- **Month Chart:**

Displays the average readings for the last 5 weeks, with the week numbers on the x-axis and the average values on the y-axis.

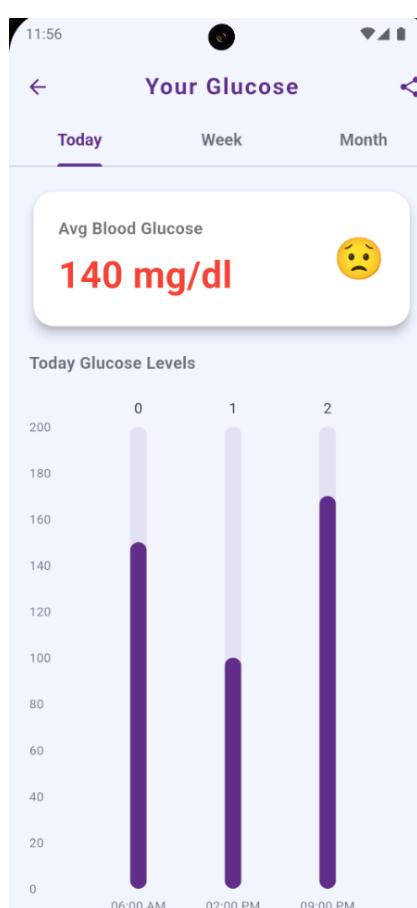


Figure 59: Today glucose levels

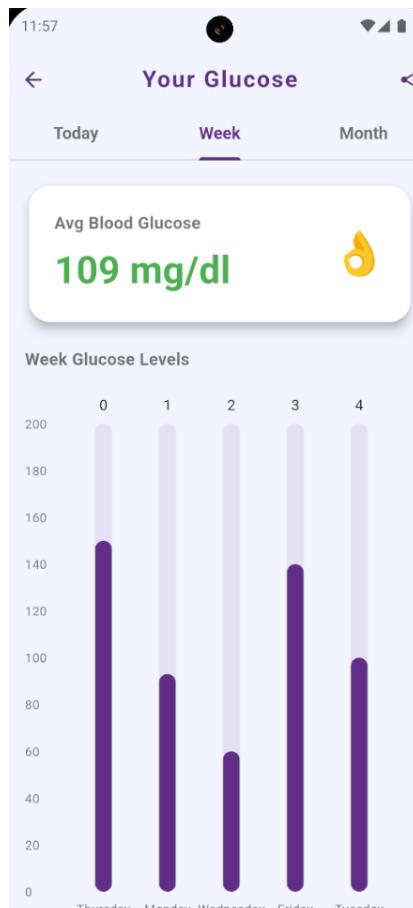


Figure 57: Week glucose levels

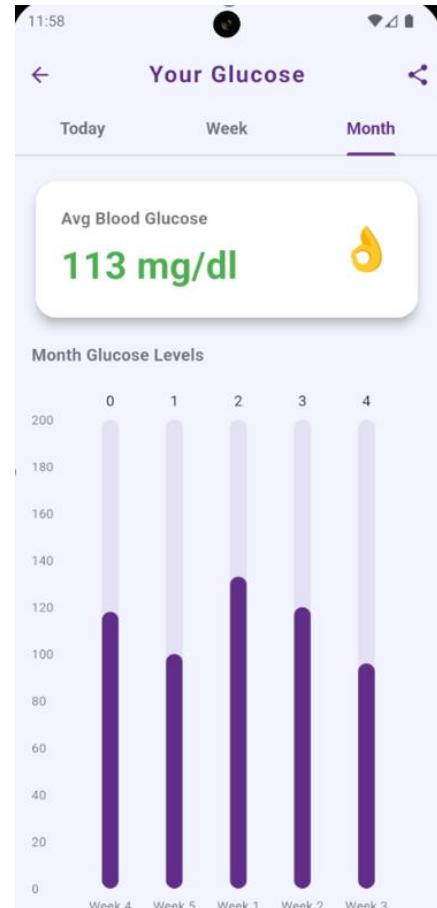


Figure 58: Month glucose levels

And the user can share his readings when click on this icon 

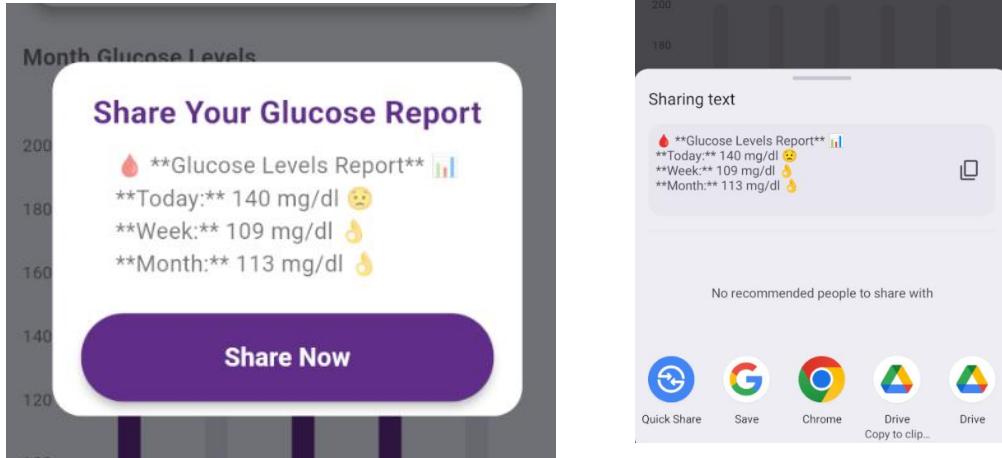


Figure 61: Glucose levels report

Figure 60: Share report options

## 2. Add Glucose Reading:

When clicked, it displays a dialog box for adding a new glucose reading.

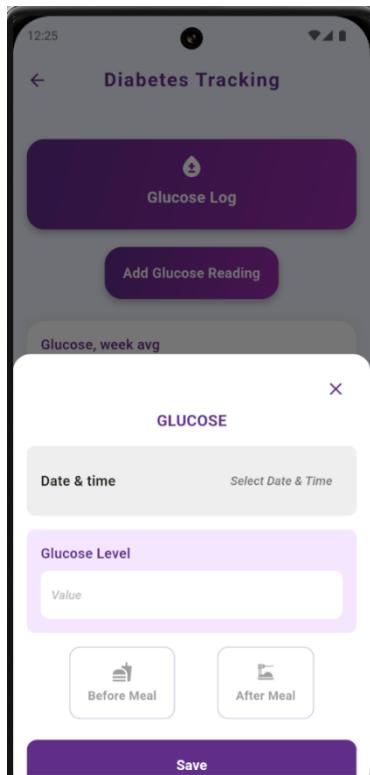


Figure 62: Add glucose reading screen

Then The user:

- Enter the date and time of the reading.

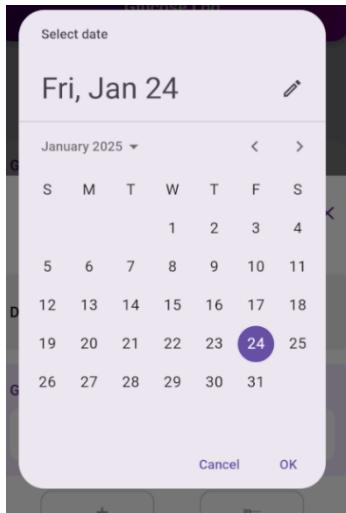


Figure 64: Choose date for glucose reading

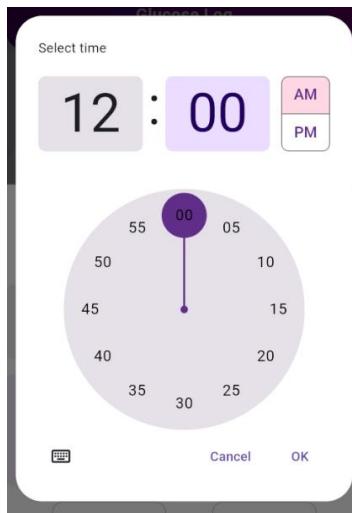


Figure 63: Choose time for glucose reading

- Input the reading value.
- Specify whether the reading was taken *before a meal* or *after a meal*.
- Save the entry.

Figure 65: Add glucose reading

### 3. Glucose, week avg:

This section displays a line chart showing the average glucose readings over the past week.

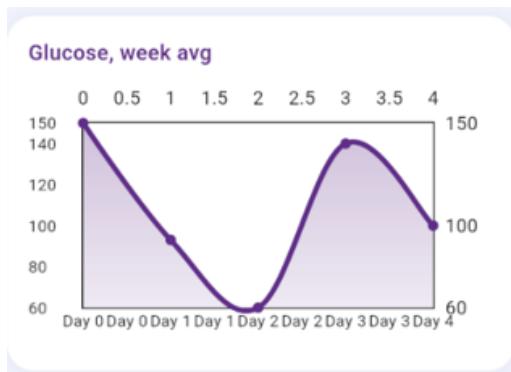


Figure 66: Glucose, week avg chart

### 4. Set reminders to measure the glucose level and enter the value to the system:

The user can set reminders to measure their glucose levels and enter the values into the system.

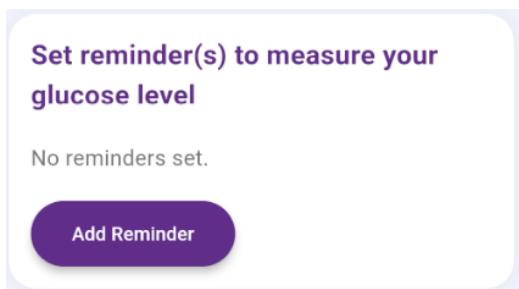


Figure 67: Reminder for measure glucose level

The user clicks on **Add Reminder**, selects the desired time, and adds it.

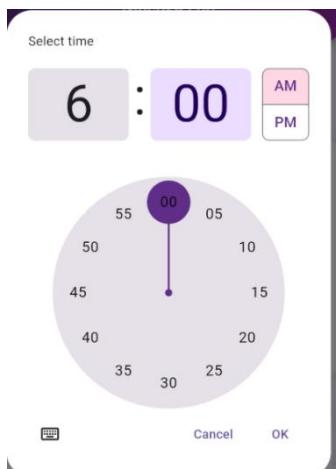


Figure 69: Choose time for reminder

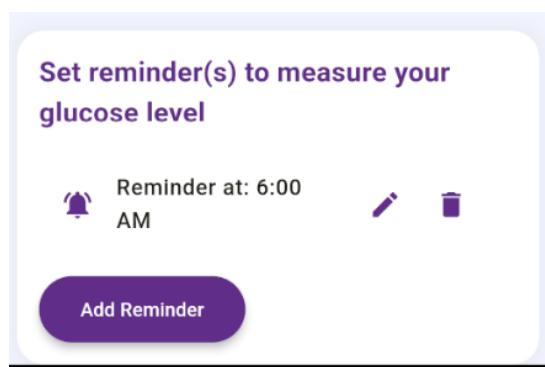


Figure 68: Add reminder for measure glucose level

When the reminder time arrives, a notification is sent to the user.



Figure 70: Arrive glucose measure reminder for patient

The notification also appears in the notifications page.

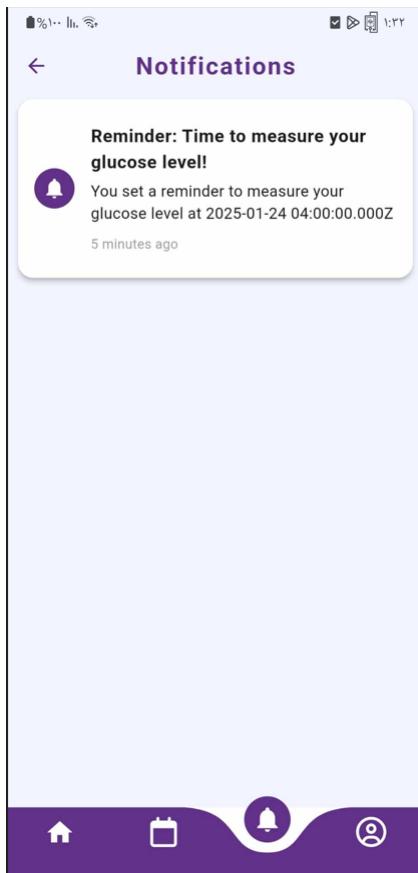


Figure 71: Show reminder notification in notification screen

## Blood Pressure:

Let's go to another patient service, which is Blood Pressure.



When the patient clicks on the Blood Pressure icon on the home page (as shown in Figure 32), the Blood Pressure Tracking screen will appear.

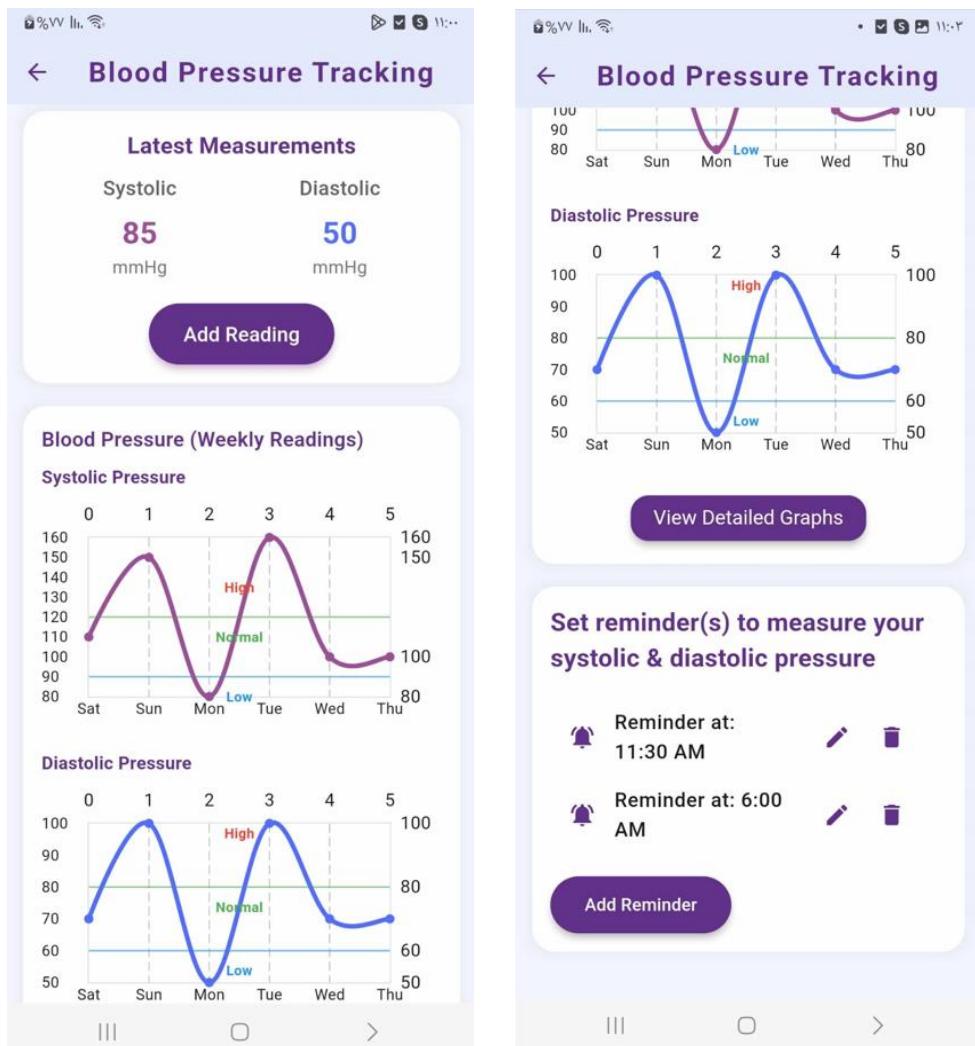


Figure 72: Blood pressure tracking screen

It consists of five sections:

## 1. Latest Measurements:



Figure 73: Latest measurements reading

Displays the most recent readings entered into the system.

## 2. Add Reading:

Add Reading

When clicked, it displays a dialog box for adding a new reading (systolic and diastolic).

The figure shows a modal dialog box titled "Add Blood Pressure Reading". It contains fields for "Systolic Pressure" (set to 100) and "Diastolic Pressure" (set to 70). Below these, there is a "Date & time" field showing "2025-01-24, 10:00 PM". At the bottom, there are "Cancel" and "Add Reading" buttons. The background of the dialog shows a faint grid and some text.

Figure 74: Add blood pressure reading

Then The user:

- Enter the date and time of the reading.



Figure 76: Choose date for blood pressure reading

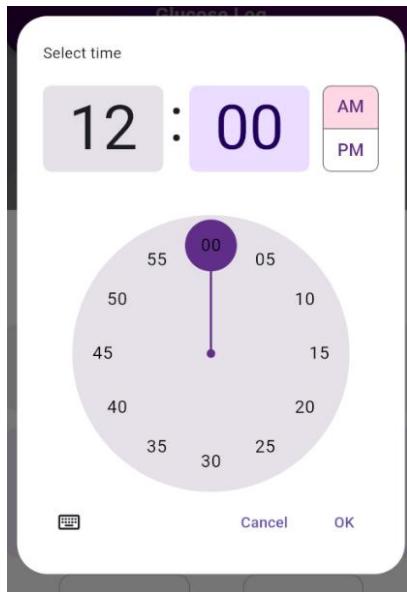


Figure 75: Choose time for blood pressure reading

- Input the reading value.
- Add Reading.

### 3. Weekly Readings:

This section features a line chart showing the average systolic and diastolic readings over the past week, with lines indicating low, normal, and high readings based on the user's age.

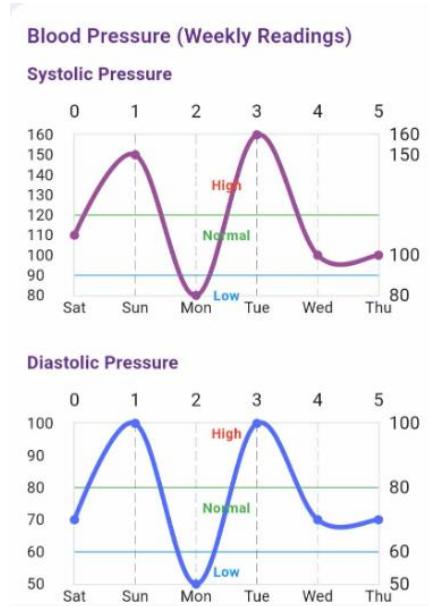


Figure 77: Weekly blood pressure readings chart

#### 4. View Detailed Graphs:

[View Detailed Graphs](#)

When clicked, it displays detailed (systolic and diastolic) readings for today, the week, and the month.

Each view shows a line chart, with lines indicating low, normal, and high readings based on the user's age.

##### A. Today, Chart:

Displays the time and value of each reading for the current day.

##### B. Week Chart:

Shows the average readings for the last 7 days, with the days of the week on the x-axis and the average values on the y-axis.

##### C. Month Chart:

Displays the average readings for the last 4 weeks, with the week numbers on the x-axis and the average values on the y-axis.

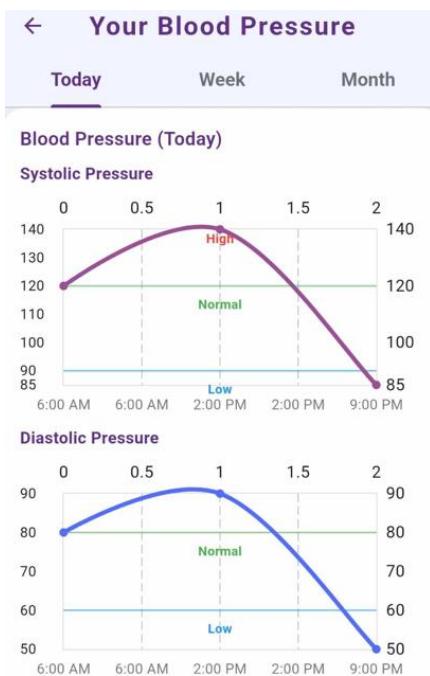


Figure 80: Graph of blood pressure readings for the today

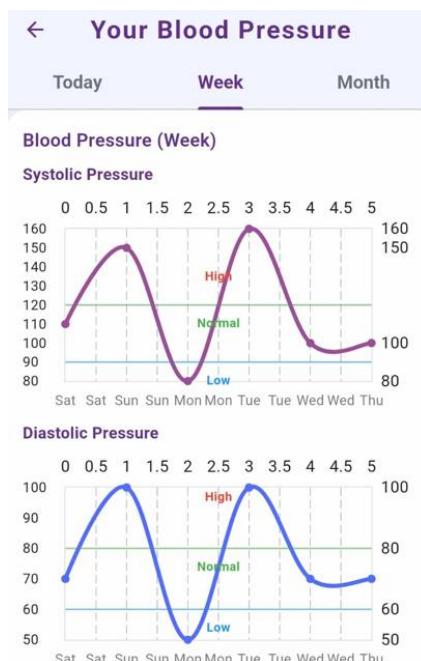


Figure 78: Graph of blood pressure readings for the week

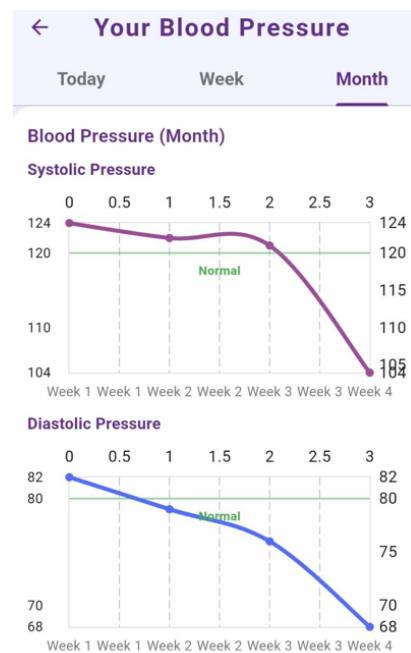


Figure 79: Graph of blood pressure readings for the month

**5. Set reminders to measure the (systolic and diastolic) pressure and enter the value to the system:**



Figure 81: Set reminder for measure blood pressure

The user can set reminders to measure their (systolic and diastolic) **pressure** and enter the values into the system.

The user clicks on **Add Reminder**, selects the desired time, and adds it.

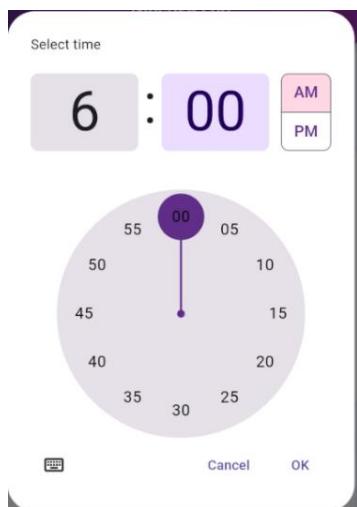


Figure 83: Choose time for reminder

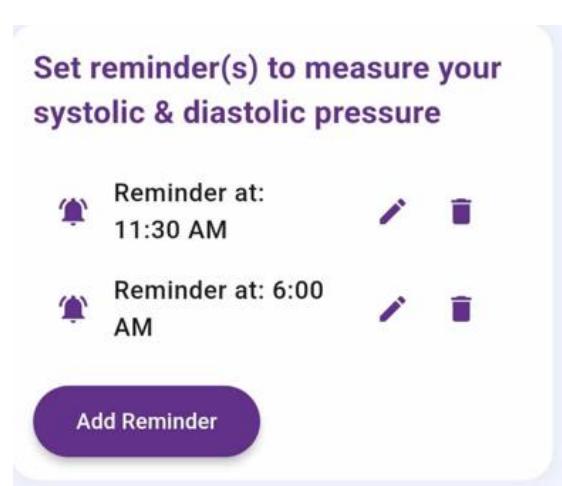


Figure 82: Add reminder for measure blood pressure

When the reminder time arrives, a notification is sent to the user.

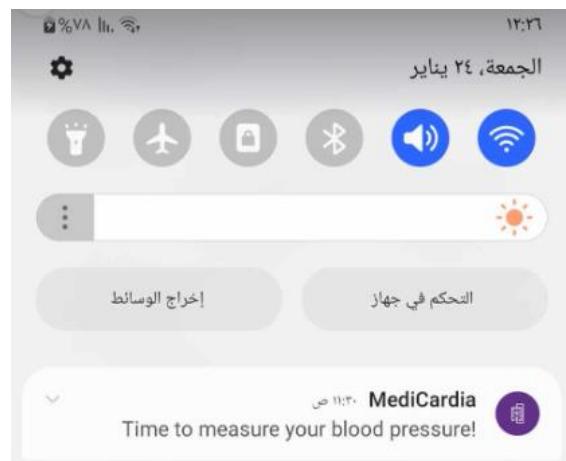


Figure 84: Arrive notification to measure blood pressure

The notification also appears in the notifications page.

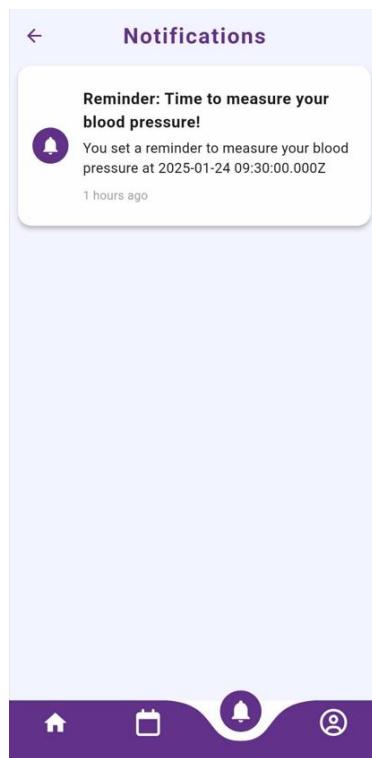


Figure 85: Reminder to measure blood pressure in notification screen

## Blood Donation:

Let's go to another patient service, which is Blood Donation.



When the patient clicks on the blood donation icon shown in Figure 32, the blood donation page will appear, through which the last blood donation made by the patient and the number of days since that date, with the possibility of adding a new date by clicking on the Add New Donation Date button. The patient can also see blood donation requests by clicking on the Go to Blood Donation Requests button.

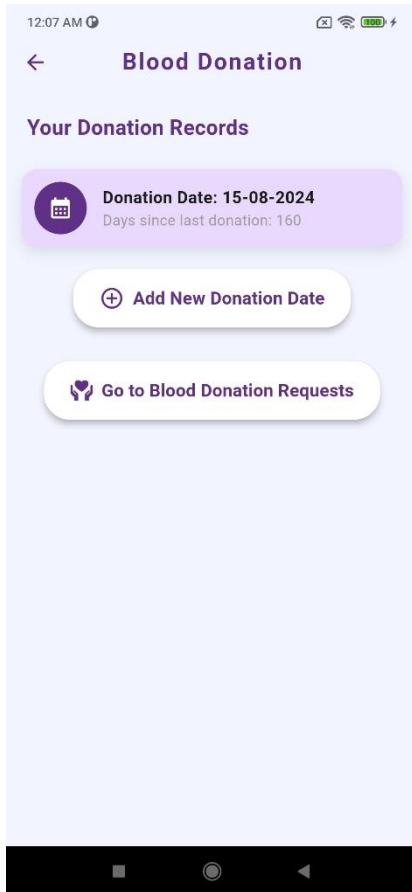


Figure 86: Blood donation screen

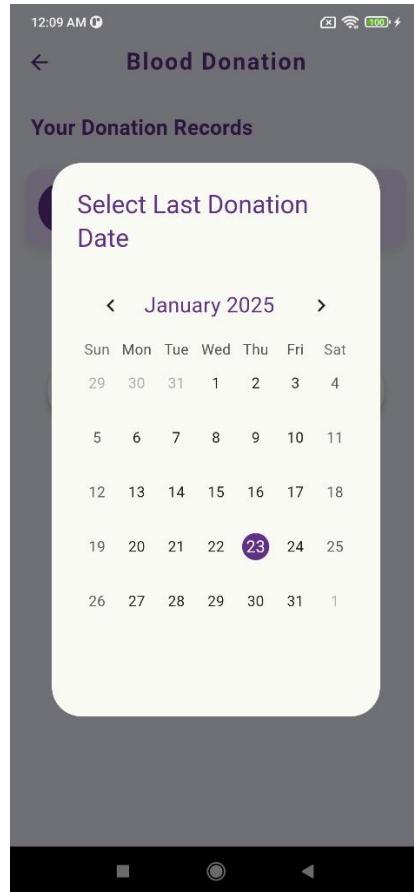


Figure 87: Choose new donation date from calendar

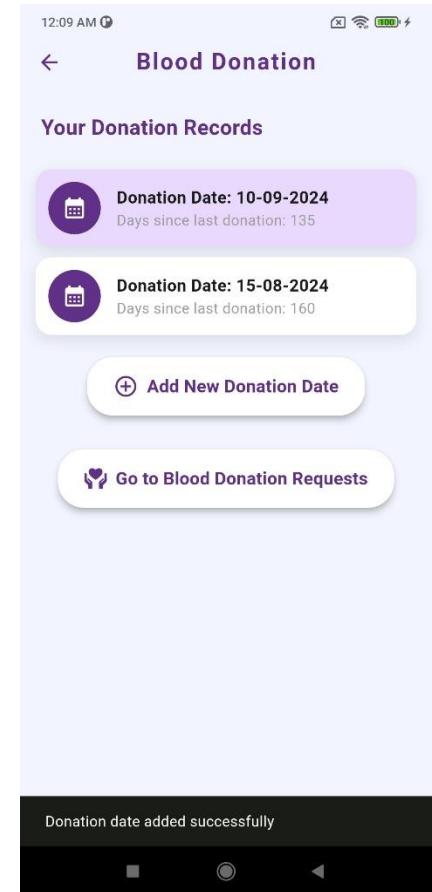


Figure 88: New date added successfully

When the patient goes to the blood donation requests page, the requests will appear, which include the name of the hospital to which the donation is requested, the required blood types, the city of the hospital, the number of blood units required, the hospital's phone number, the date of the request, and a map showing the location of the hospital.

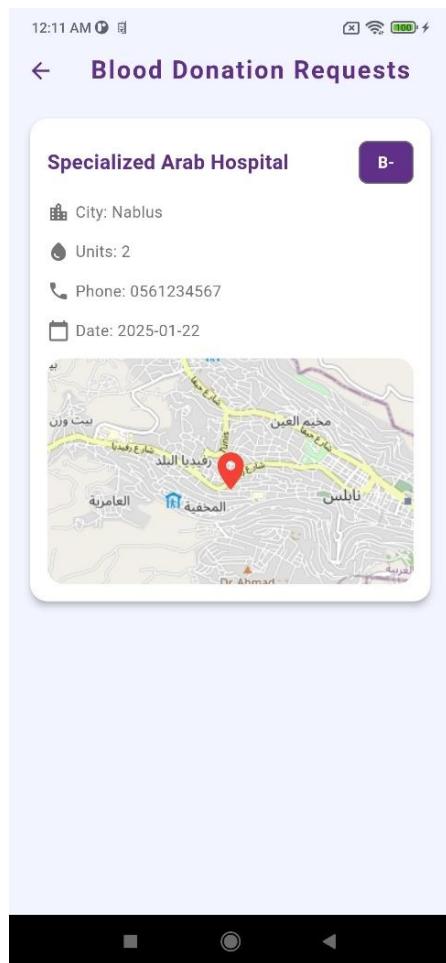


Figure 89: Blood donation requests screen

## Find Doctor:

Let's go to another patient service, which is Find Doctor.



When the patient clicks on the Find Doctor icon shown in Figure 32, the Find Doctor page will appear as shown in Figure 62, which contains a section to search for a doctor using his name, and below it a section to display doctors appears, so that a card appears for each doctor showing his photo, name, specialty, and rating. By clicking on it, the details page for the selected doctor appears, which can be filtered by specialty. At the bottom of the page there is a button for your doctors through which the patient can see his personal doctors. There is also an icon at the far right of the top of the screen through which the patient's permission requests from doctors.

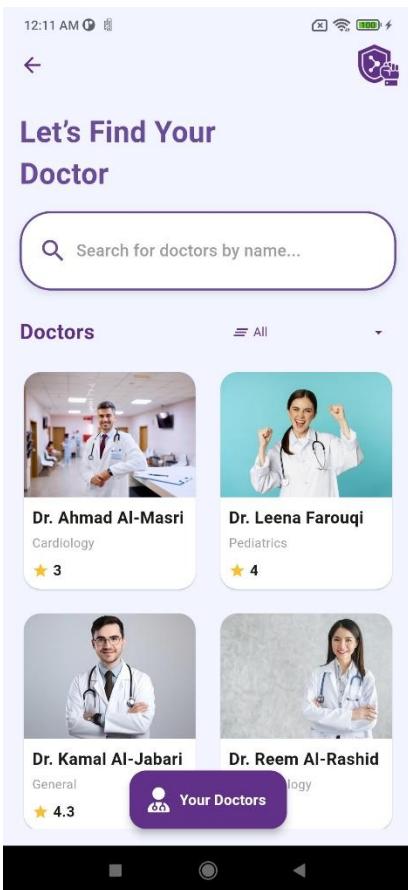


Figure 92: Find doctor screen

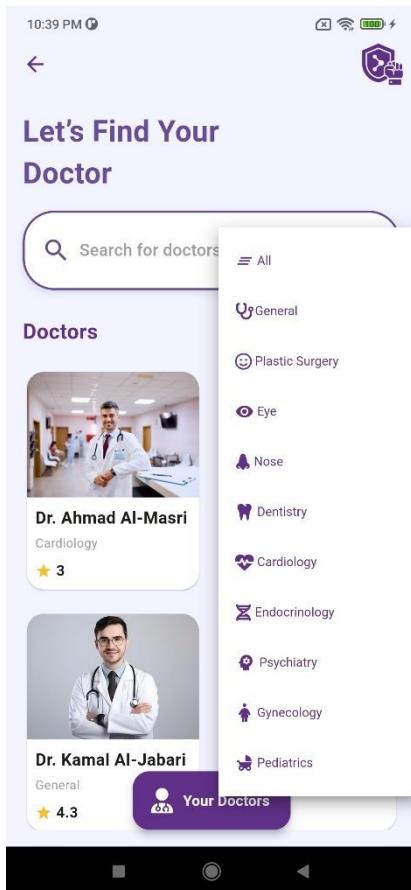


Figure 91: Specialization options for filtering doctors

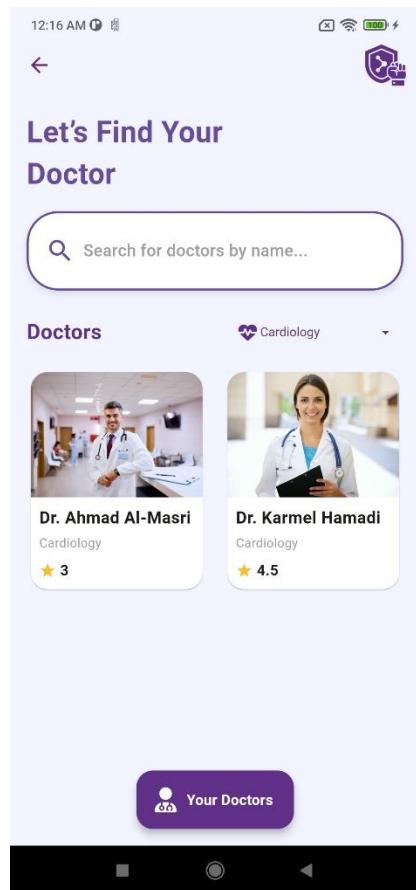


Figure 90: Filter doctors by cardiology specialty

When the patient clicks on this icon  requests for access permission from doctors will appear, showing the doctor's name, priority, deadline, and reason for the request to access the patient's private medical information, while giving the patient the freedom to accept or reject the request.

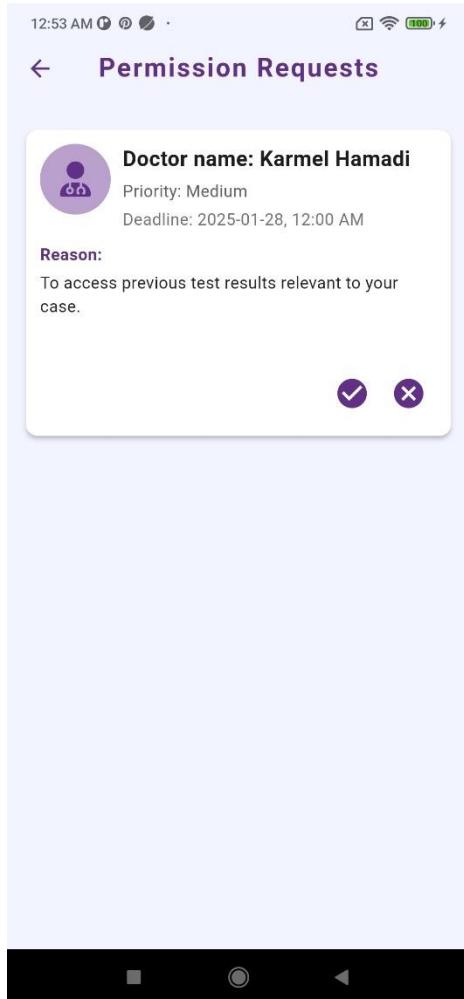


Figure 93: Permission requests screen

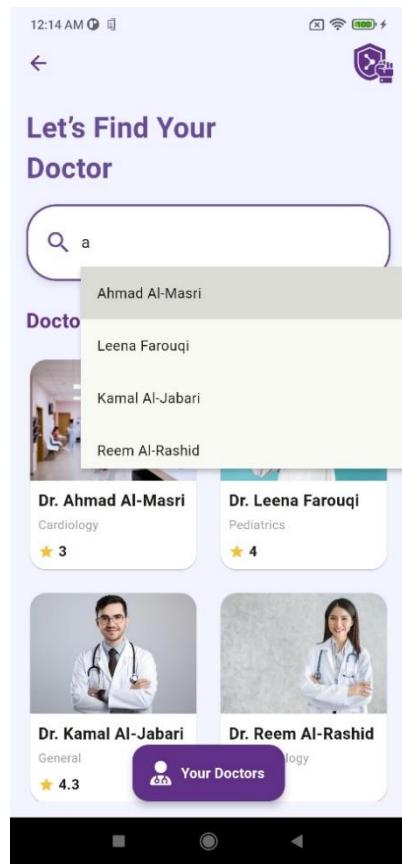


Figure 95: Search for doctor by name

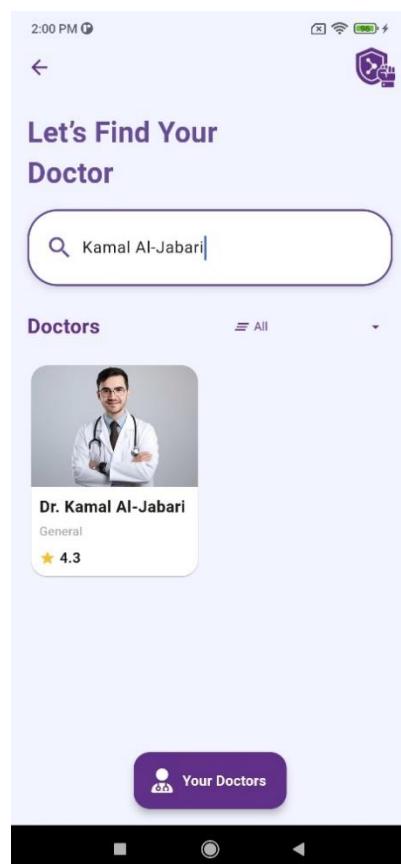
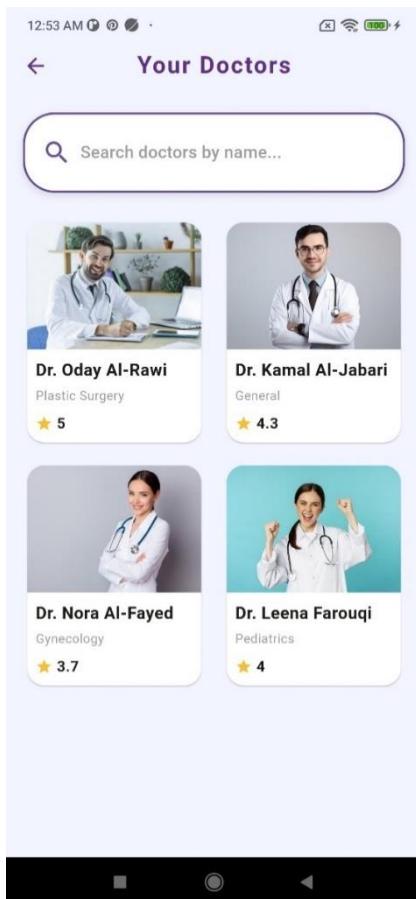


Figure 94: Search doctor result



63

Figure 97: Your Doctors screen

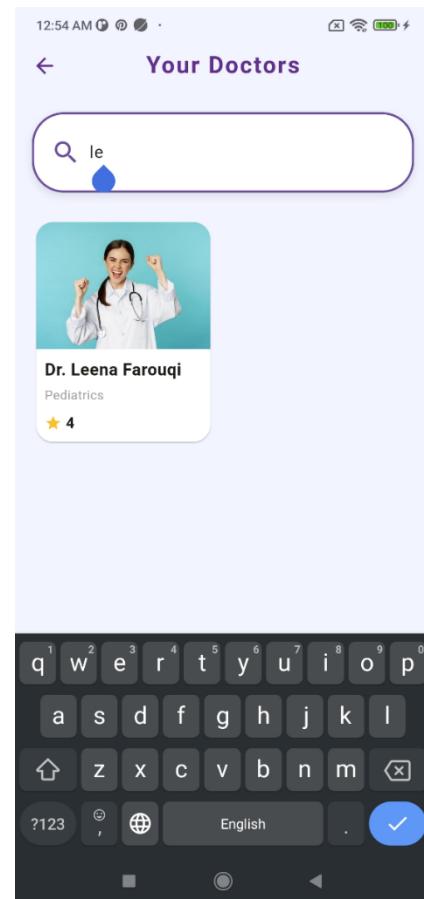


Figure 96: Search in Your Doctors screen

The doctor's details page, which shows the doctor's card, his picture, name, and specialty, and the ability to chat him through the icon on the far right .



Below it is a section that displays the number of the doctor's patients, his rating, and reviews about him. View his address, and about the doctor, and below it is a button **Appointment** to book an appointment with the doctor, and a button **Set as my doctor** to add the doctor as the patient's personal doctor.



Figure 99: Doctor details screen

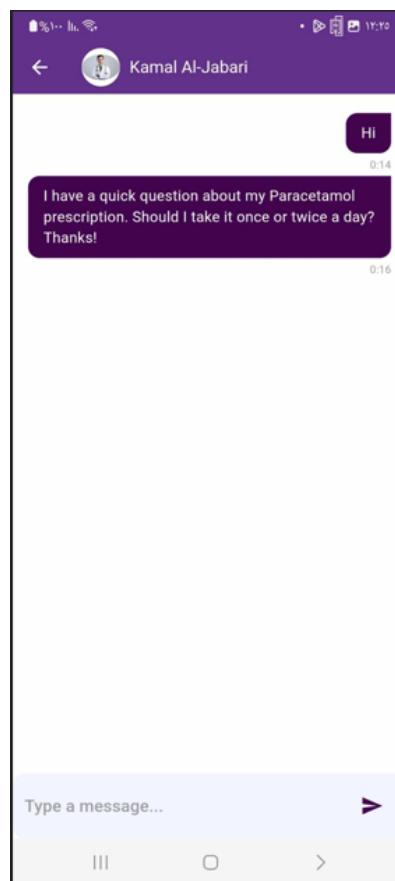


Figure 98: chatWithDoctor

Then the message arrives to the doctor with a notification.

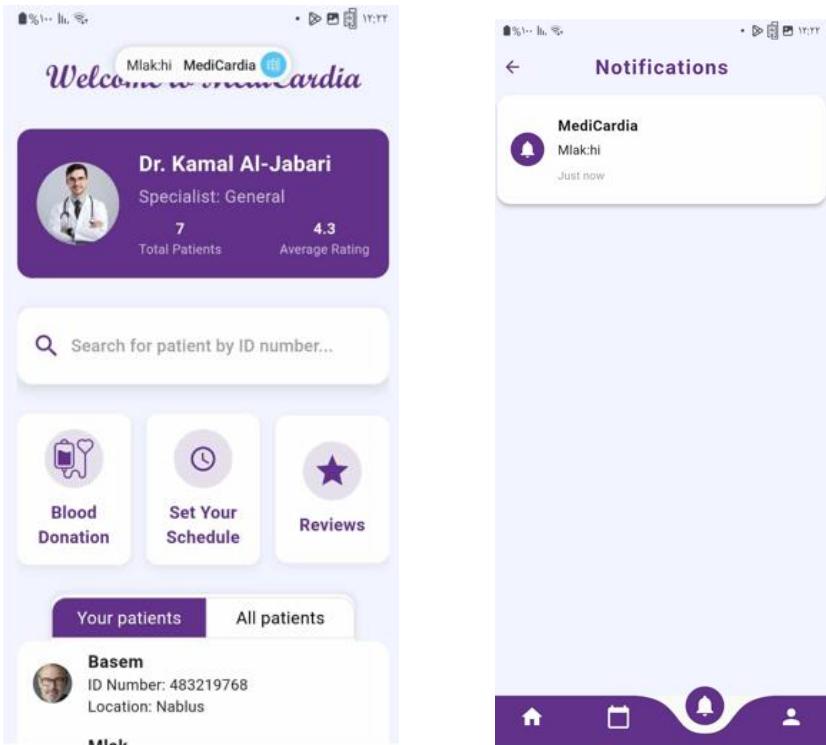
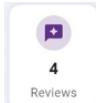


Figure 100: messageNotificationArrivesToDoctor

By clicking on the reviews



The doctor's reviews page will appear as shown in Figure 98. The “Write a Review” button will appear only when the patient is being treated by this doctor as shown in Figure 100. A page will appear to enter the review as shown in Figure 99. Then a dialogue will appear explaining that the review has been submitted successfully.



Figure 103: Show doctor reviews



Figure 102: Show write a review button

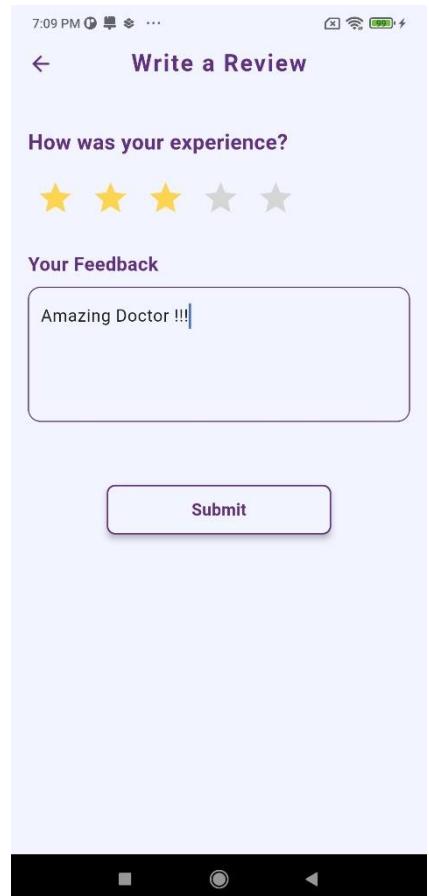


Figure 101: Write review

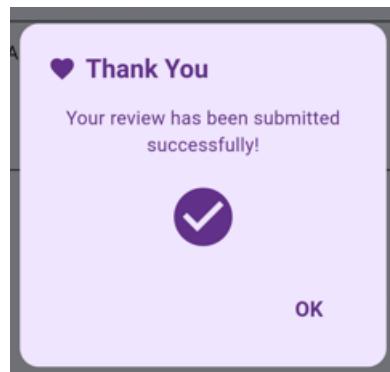


Figure 104: Review submitted successfully

By clicking on the Appointment button

Appointment

The appointment page appears, which contains a section to choose the date, a calendar for the patient to choose the date he wants, and thus the times available for this doctor will appear in the available times section so that the patient chooses the time that suits him, then clicks the book an appointment button, after which a dialog will appear to add a note about the reason for the appointment, which is optional. The patient can skip it or add it and click the **Submit** button, then a message will appear explaining to the patient that the appointment has been booked, stating the doctor's name, date, time, and note, if any.



Figure 105: The patient appointment screen

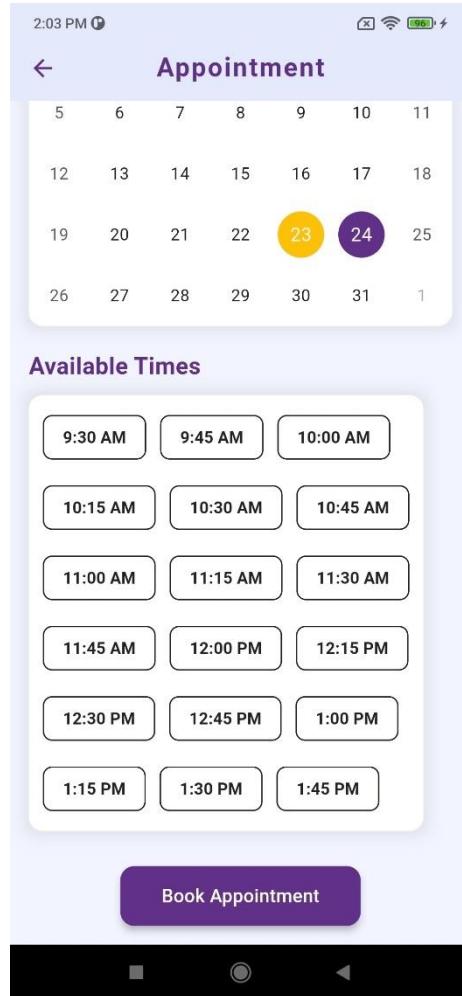


Figure 106: Select date then show available times in this day

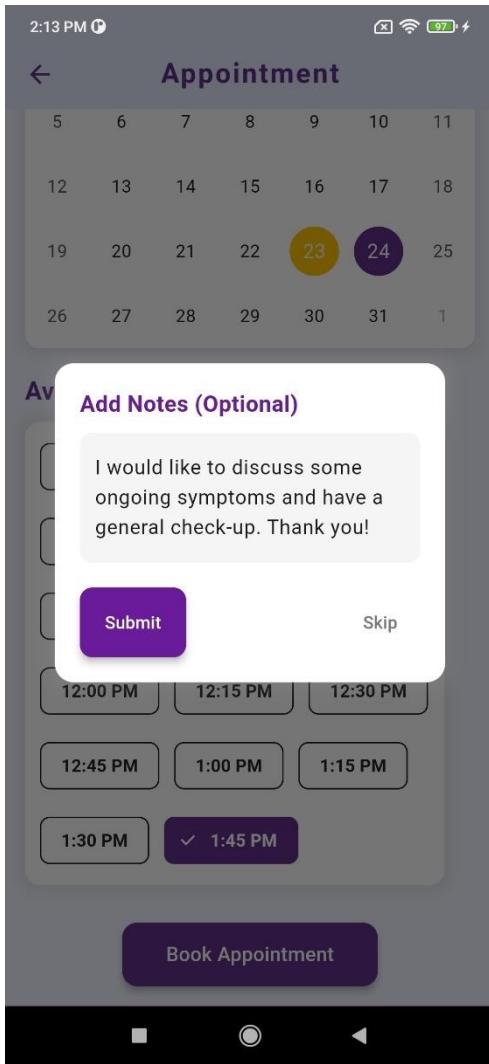


Figure 108: Add note after choose time

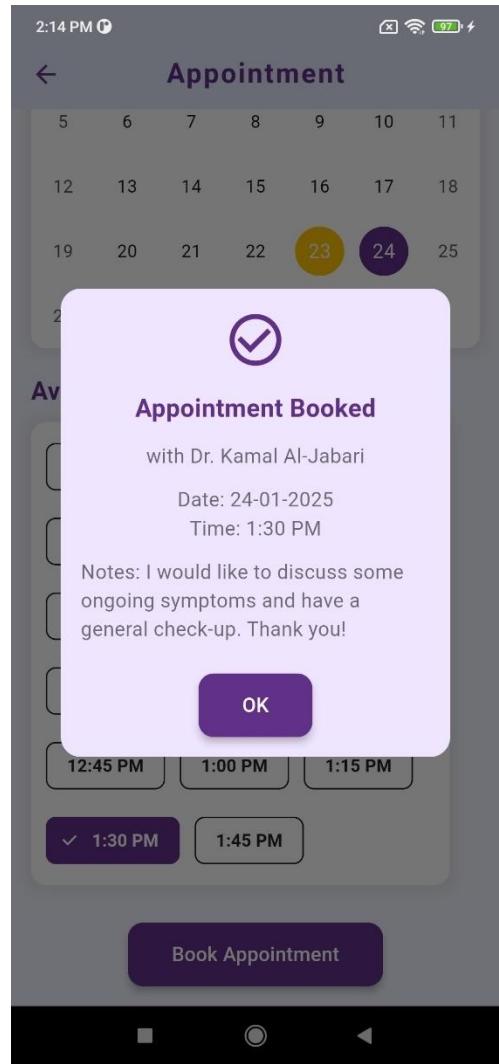


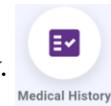
Figure 107: Appointment booked successfully

## Private medical data:

### Medical History:

Let's go to another patient service, which is Medical History.

This page displays one of the patient's private types of information, which is the medical history, such as previous injuries or acute conditions, surgeries, vaccinations, pregnancy and childbirth history (for women), or chronic or recurring symptoms. Through it, the patient can see the medical histories he has entered, with the possibility of modifying or deleting them by click on this  this drop-down will appear  or adding a new medical history by click on 



 Edit

 Delete

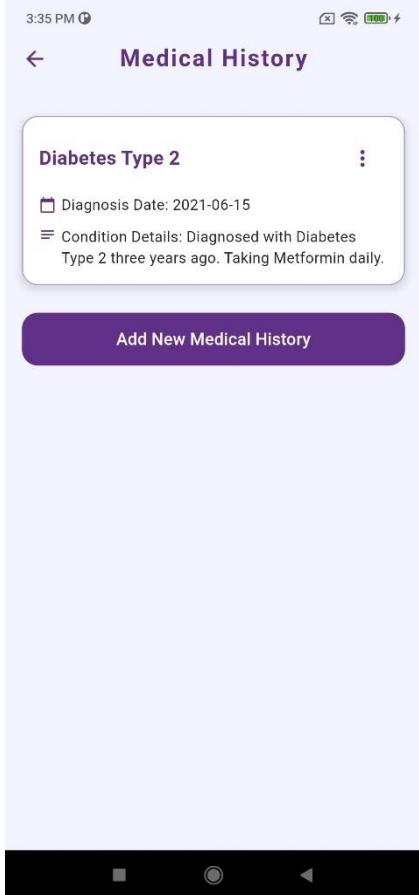


Figure 111: Medical history screen

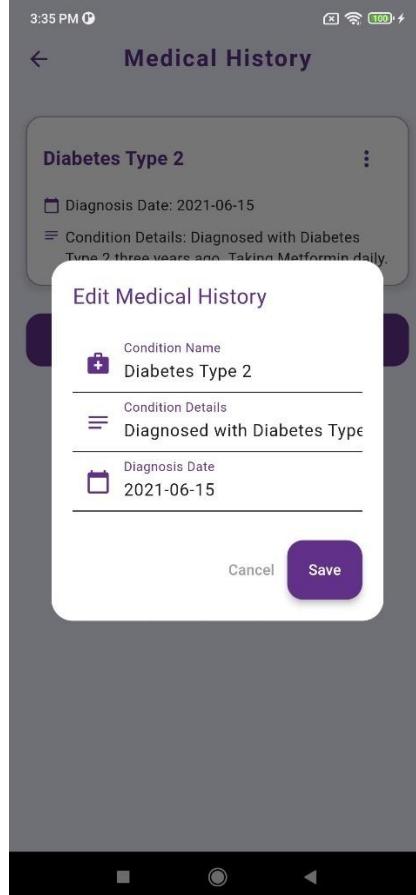


Figure 110: Edit medical history

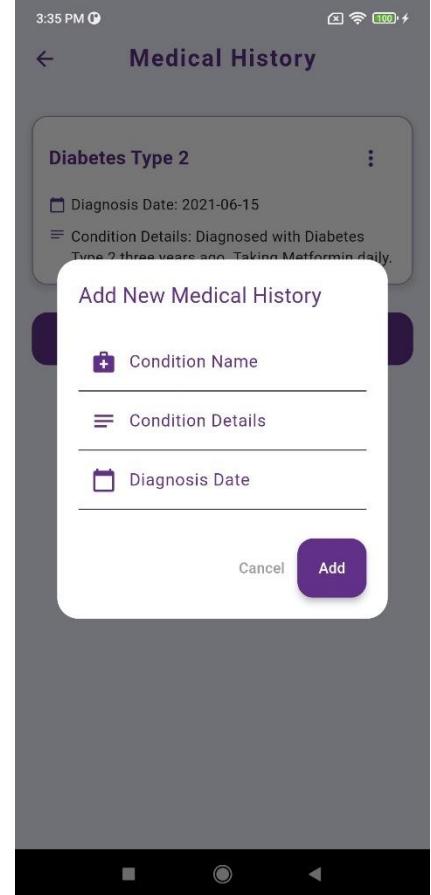


Figure 109: Add new medical history

## Lab Tests:

Let's go to another patient service, which is Lab Tests.



Lab Tests

This page displays another one of the patient's private types of information, which is the lab tests. Through it, the patient can see the lab tests he has entered, with the possibility of modifying or deleting them by click on this drop-down will appear or adding a new lab test by click on

Delete

The figure consists of three screenshots of a mobile application interface for managing lab tests. All three screenshots show the same layout: a header with the time (3:36 PM), signal strength, battery level, and a back arrow; a title 'Lab Tests' with a 'More options' icon; a list item for an 'HbA1c Test' with a date (2023-11-13) and result (7.5%); and a purple 'Add New Lab Test' button at the bottom.

- Figure 114: Lab tests screen** (Left): Shows the main list of lab tests. An 'Add New Lab Test' button is visible at the bottom.
- Figure 113: Edit lab test** (Middle): A modal dialog titled 'Edit Lab Test' is displayed over the list. It contains fields for 'Test Name' (HbA1c Test), 'Test Result' (7.5%), and 'Test Date' (2023-11-13). It includes 'Cancel' and 'Save' buttons.
- Figure 112: Add new lab test** (Right): A modal dialog titled 'Add New Lab Test' is displayed. It has fields for 'Test Name', 'Test Result', and 'Test Date'. It includes 'Cancel' and 'Add' buttons.

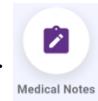
Figure 114: Lab tests screen

Figure 113: Edit lab test

Figure 112: Add new lab test

## Medical Notes:

Let's go to another patient service, which is Medical Notes.



This page displays another one of the patient's private types of information, which is the medical notes. Through it, the patient can see the medical notes he has entered, with the possibility of modifying or deleting them by click on this drop-down will appear or adding a new medical note by click on

**Add New Medical Note**

Delete

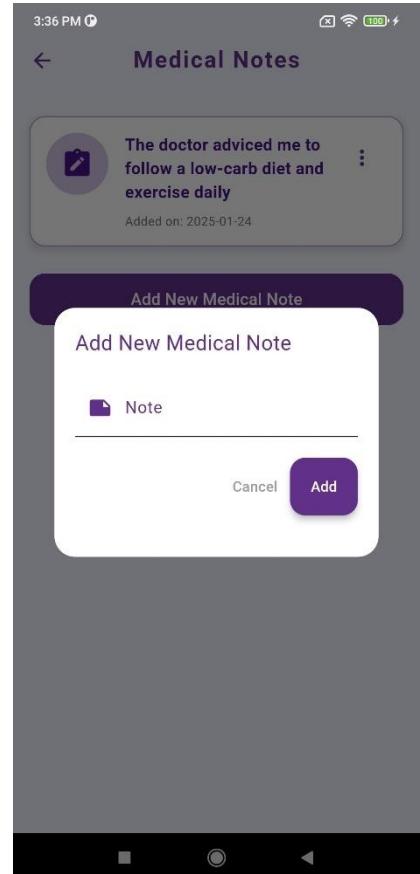
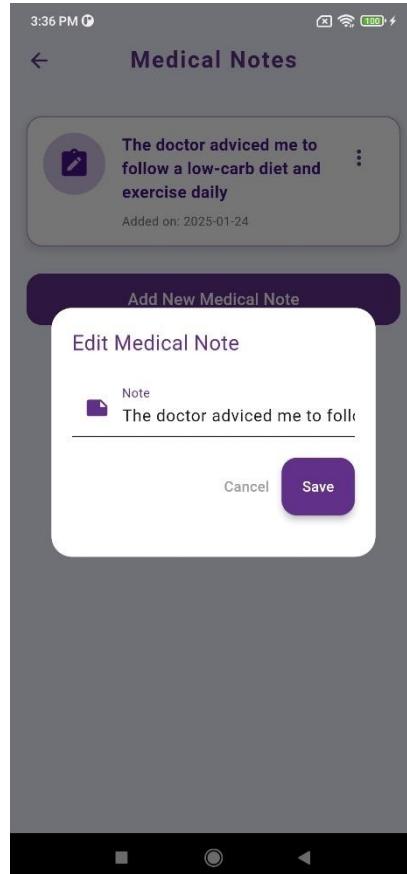
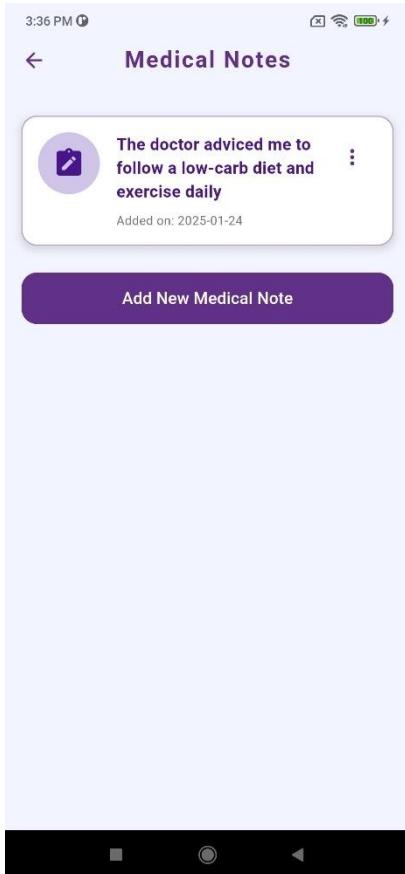


Figure 115: Medical notes screen

Figure 116: Edit medical note

Figure 117: Add new medical note

## Treatment Plans:

Let's go to another patient service, which is Treatment Plans.

This page displays another one of the patient's private types of information, which is the treatment plans. Through it, the patient can see the treatment plans he has entered, with the possibility of modifying or deleting them by clicking on this  drop-down will appear  or adding a new treatment plan by click on 

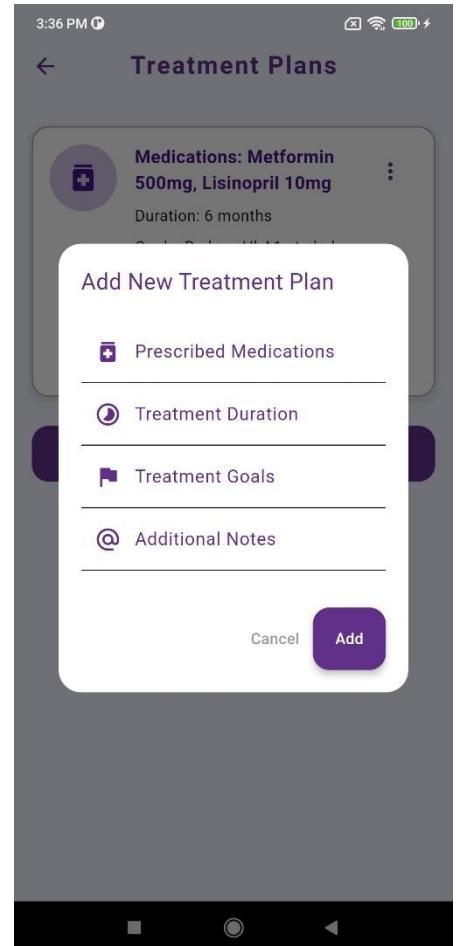
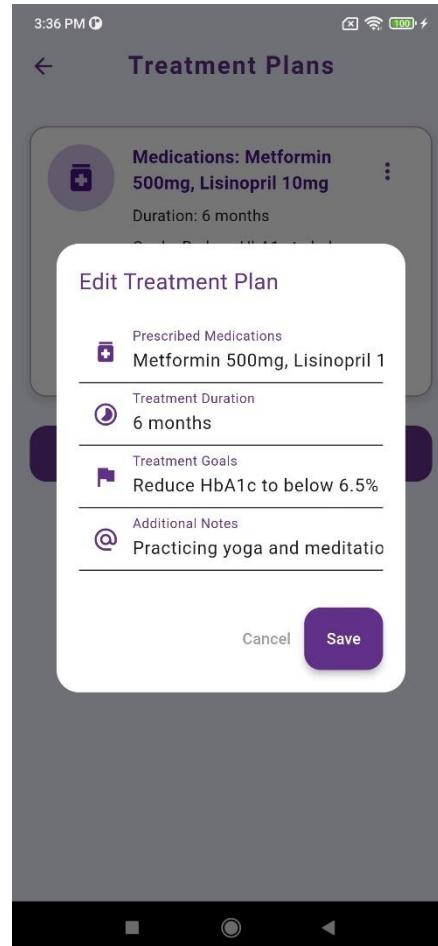
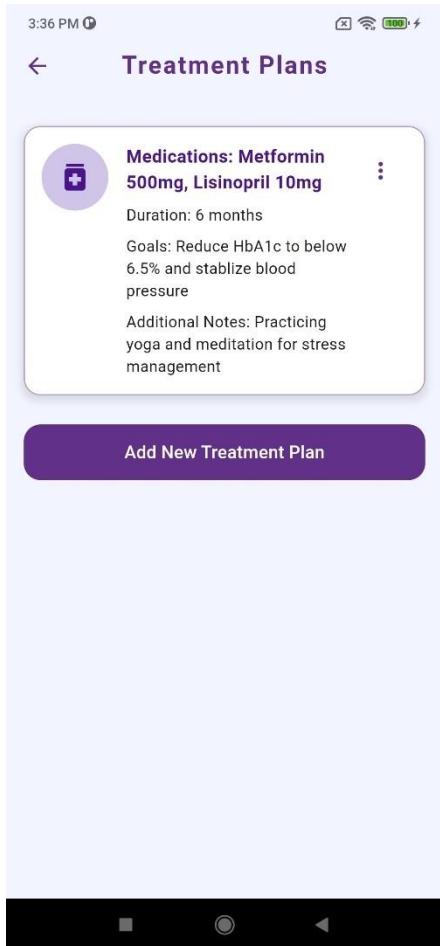


Figure 120: Treatment plans screen

Figure 118: Edit treatment plan

Figure 119: Add new treatment plan

## Patient calendar

This page displays the appointments that the patient has booked with doctors, showing current appointments with the name of the doctor, date and time for each appointment, and the possibility of deleting the appointment by click on 

Another section displays appointments that have been cancelled by the patient, with the possibility of testing a new appointment on the same day or cancelling it.

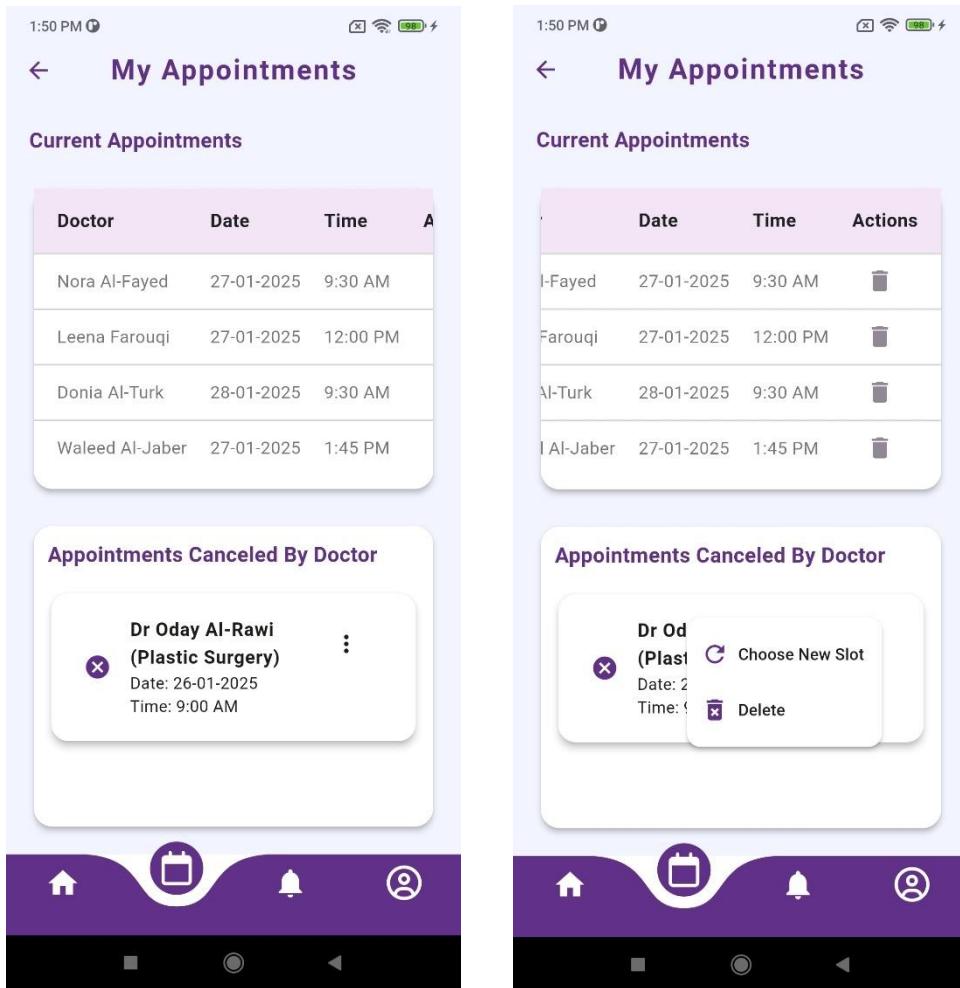


Figure 121: Patient appointments

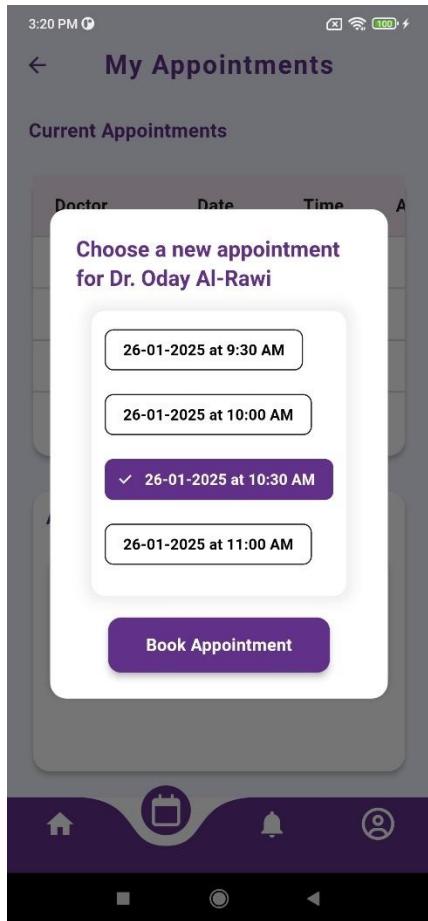


Figure 122: Choose new slot

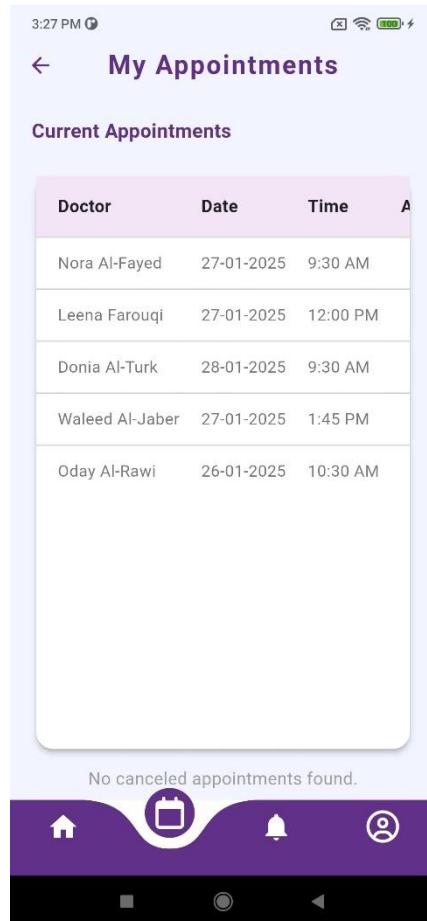


Figure 123: New appointment added

## Patient profile

The patient profile page through which the patient can modify his profile, set settings that enable him to turn on or off notifications, change his account password, view pages about us or information, or log out of the application.

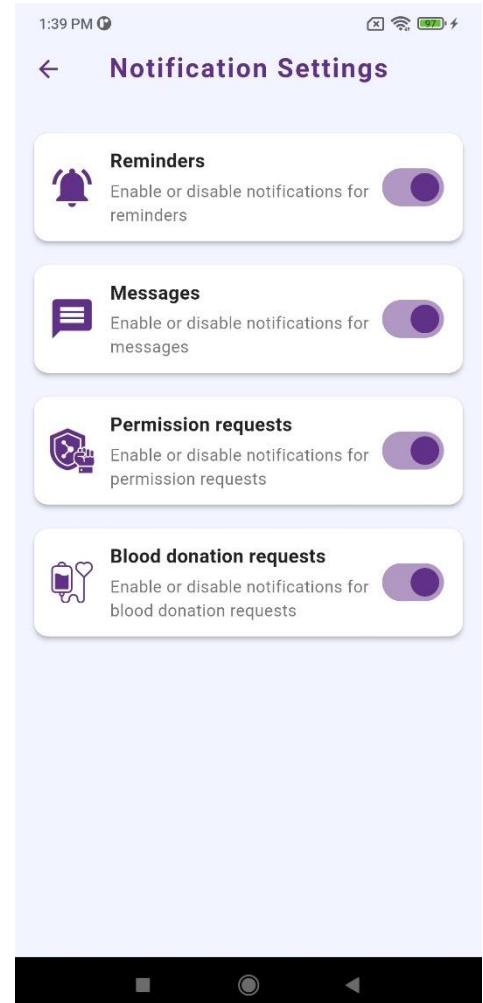
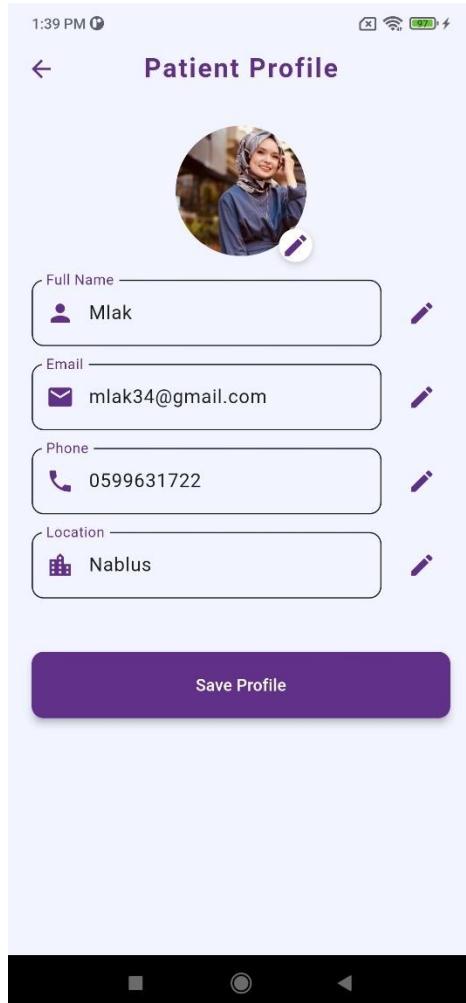
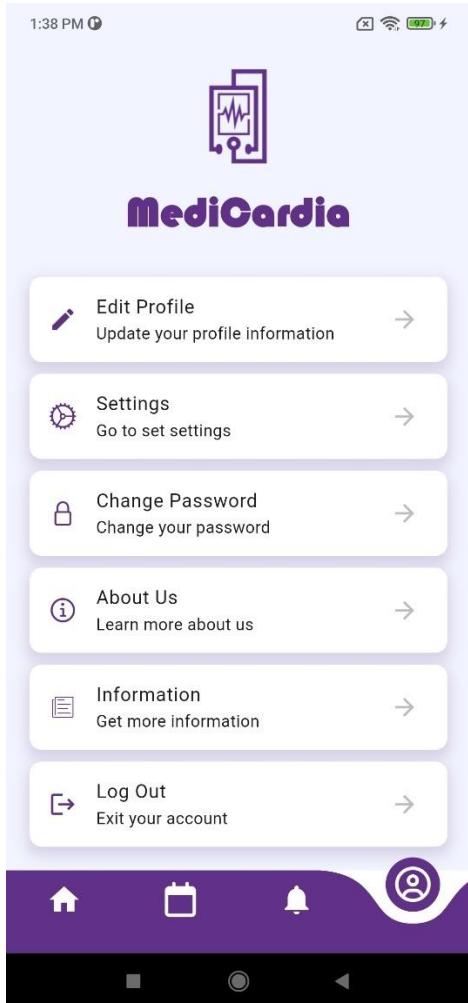


Figure 124: Profile screen

Figure 125: Edit profile screen

Figure 126: Notification settings

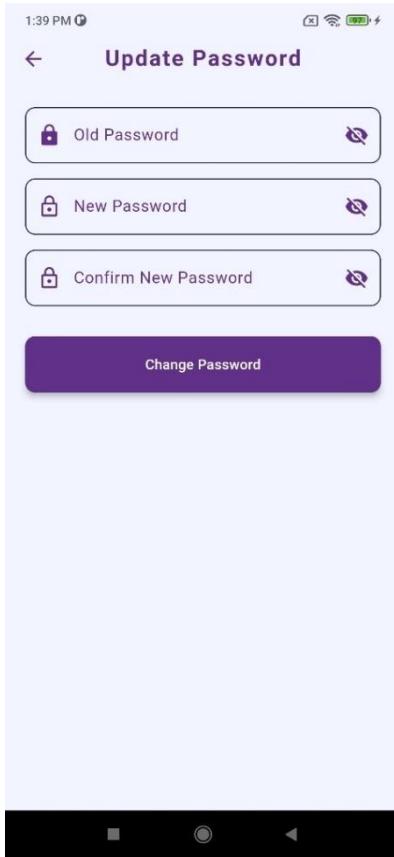


Figure 127: Update password screen

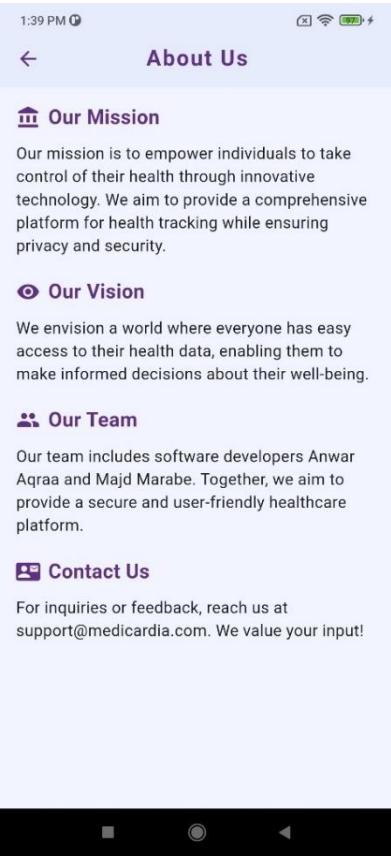


Figure 128: About us screen



Figure 129: Information screen



#### 4.2.6 Doctor home

When the doctor enters the application, the doctor's home page will appear, at the top of which an animated welcome sentence will appear.

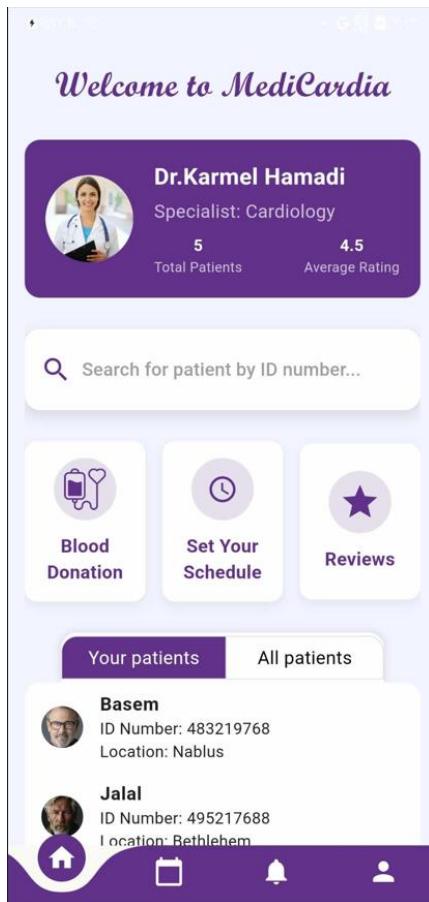


Figure 130: Doctor home screen

It consists of five sections:

##### 1. Doctor Information:

At the top, the doctor's name, profile picture, specialty, total patients, and average rating are displayed.



Figure 131: Doctor information card

## 2. Patients Overview:

- **Your Patients:** Displays a list of patients whose medical information the doctor has access to.
- **All Patients:** Displays a list of all patients in the system.

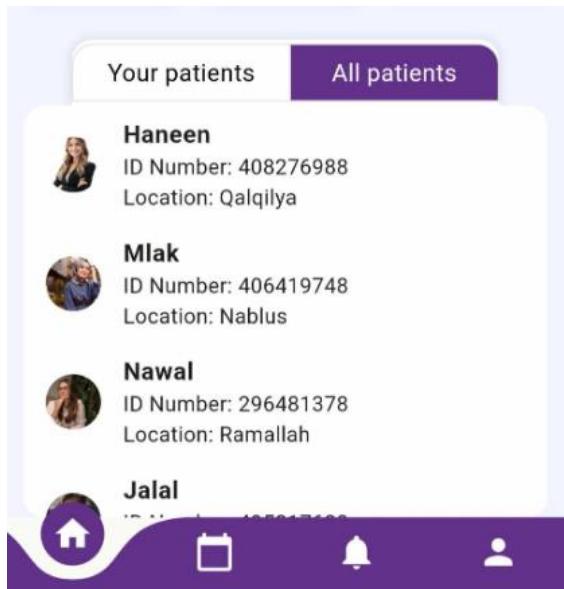


Figure 133: All patients in Medi Cardia

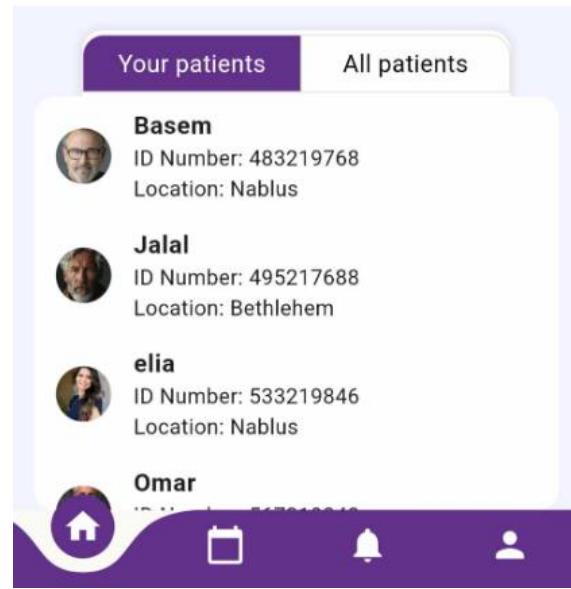


Figure 132: Doctor patients

## 3. Search Section:

The doctor can use the search section to search for patients using their ID number in both categories.

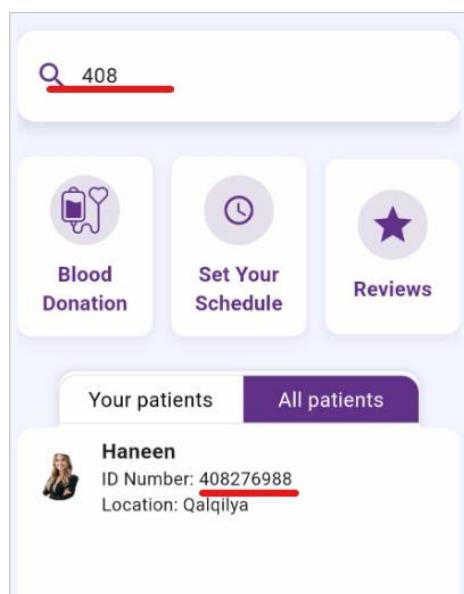


Figure 134: Search for a patient from all patients by ID number

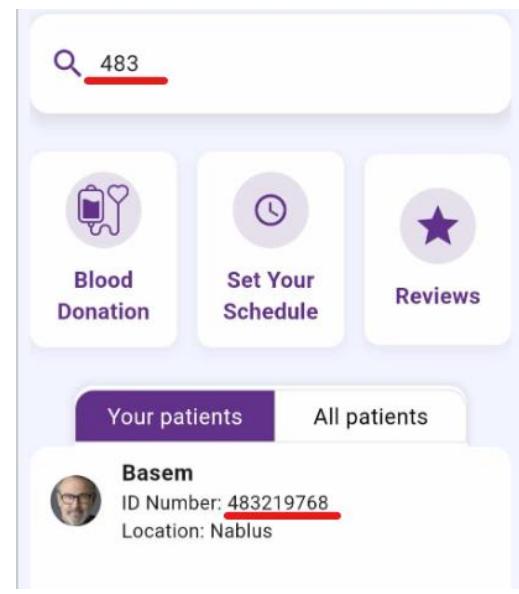


Figure 135: Search for a patient from doctor patients by ID number

## Patient Information:

### 1. Public information:

When the doctor clicks on a patient they do not have access to, a page will appear showing only the public information of the selected patient, and the ability to chat him through the icon on the far right.

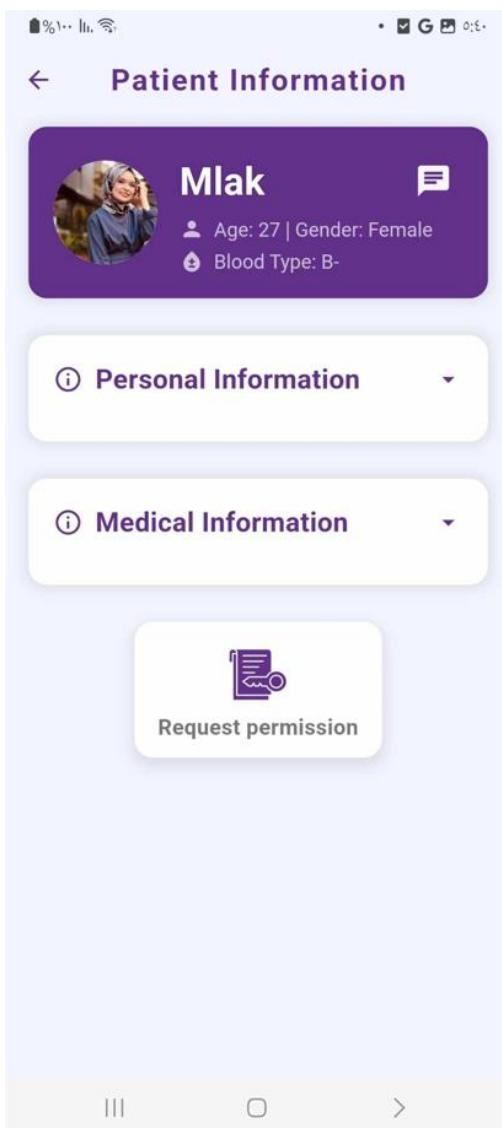


Figure 136: Patient information screen

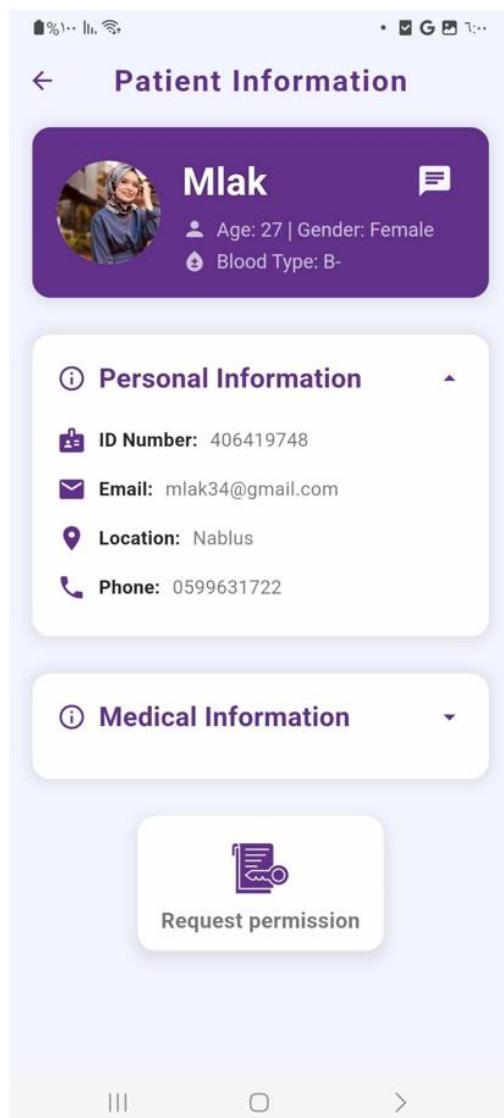


Figure 137: Patient personal information

## Chat With Patient:

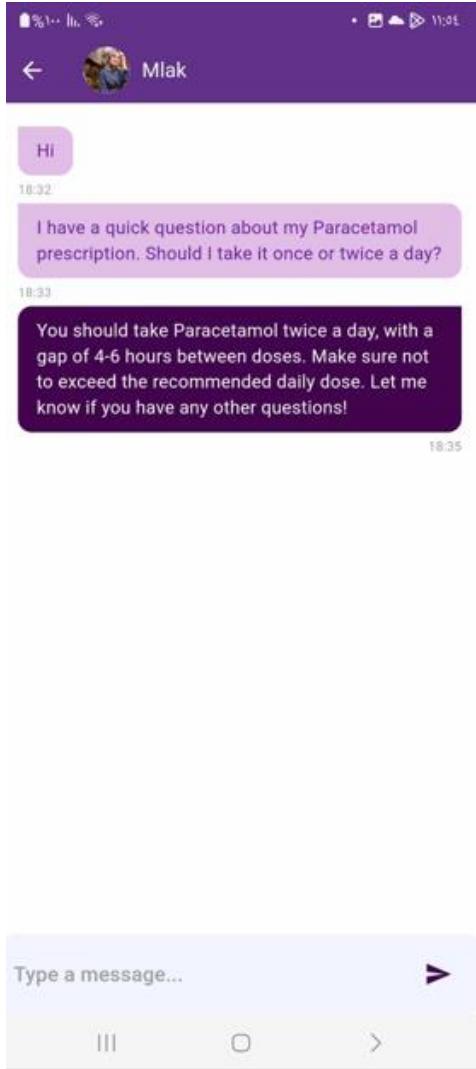


Figure 138: ChatWithPatient

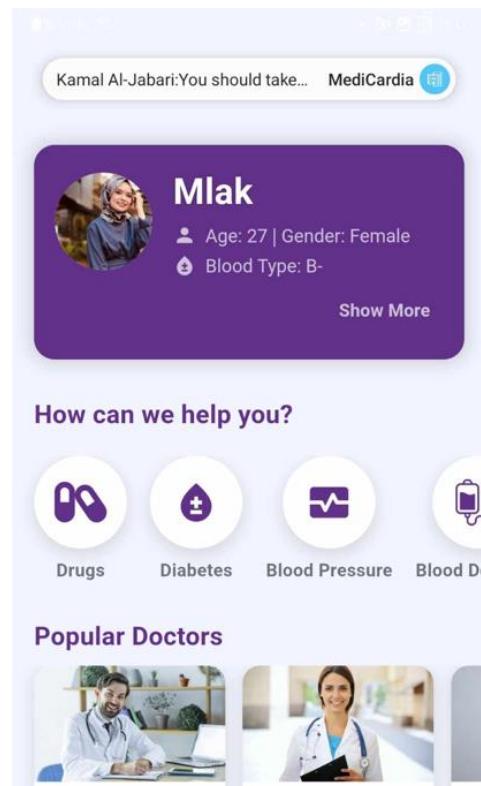


Figure 139: notificationSentToThePatient

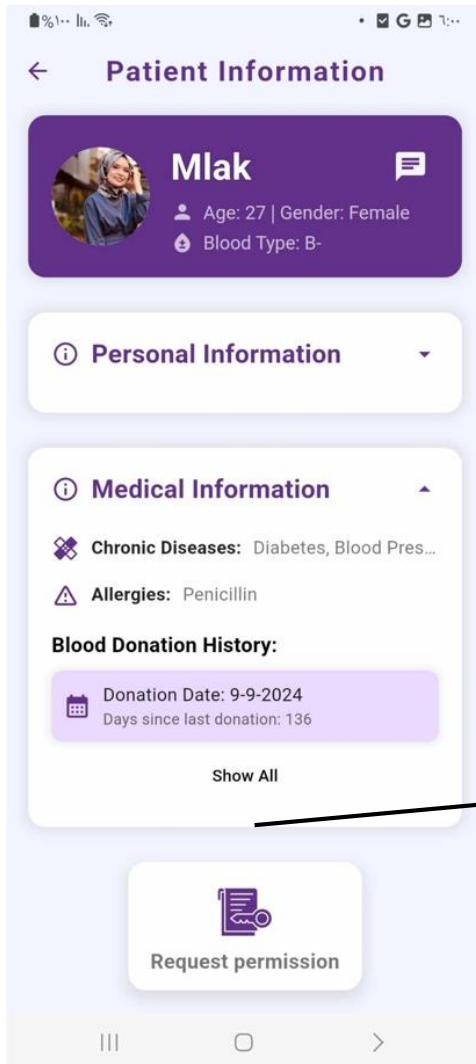


Figure 140: Patient medical information



Figure 141: Show all blood donation history

Then, if the doctor needs access to the patient's private information, they can send a permission request by clicking the "**Request Permission**" button.

Once clicked, a **Request Permission** dialog appears.

The figure consists of two side-by-side screenshots of a mobile application interface. Both screenshots show a top navigation bar with icons for battery, signal, and time. Below this is a header "Patient Information" with a back arrow. Underneath is a purple card with a profile picture of a person, the name "MIRAK", and the text "Age: 27 | Gender: Female" and "Blood Type: B-".

The left screenshot shows a "Personal Information" section with a dropdown arrow. Below it is a "Medical Information" section with a dropdown arrow. A modal dialog box titled "Request Permission" is overlaid. It contains a "Reason for Request:" field with placeholder text "Enter reason for request...". Below this are "Deadline:" and "Priority:" sections. The "Deadline:" section has a "Select Deadline" button. The "Priority:" section has three buttons: "High", "Medium", and "Low". At the bottom of the dialog is a purple "Submit Request" button. Navigation icons (three vertical bars, a square, and a right arrow) are at the very bottom.

The right screenshot shows the same interface but with the "Request Permission" dialog partially open. The "Reason for Request:" field is visible. The "Deadline:" and "Priority:" sections are also visible. The "Submit Request" button is at the bottom. The navigation icons are at the bottom.

Figure 142: Permission request form

The doctor completes the required fields in the dialog and submits the request. The request is sent to the patient, along with a notification.

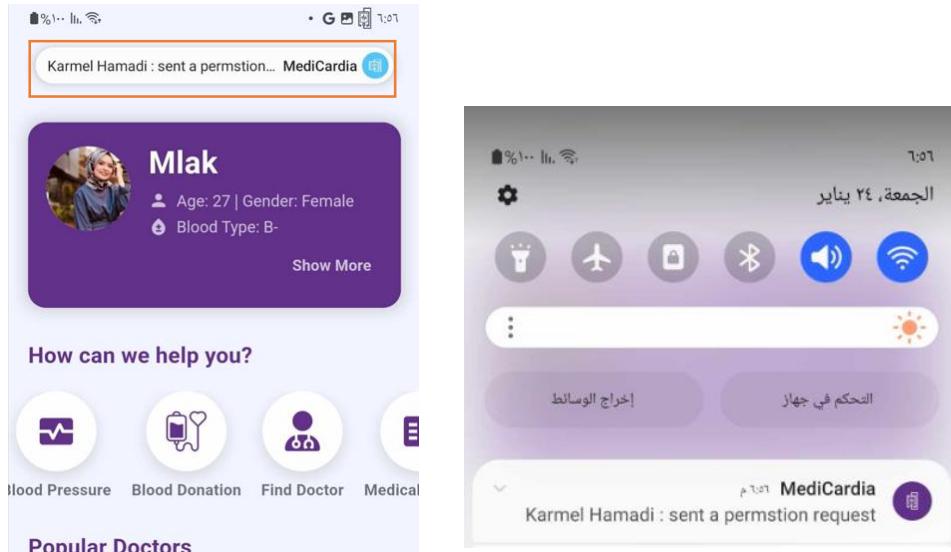


Figure 143: A notification requesting permission appears

The notification is displayed on the patient's notification page. In the **Permission Requests** section (as shown in Figure 93), the patient can either accept or reject the request.

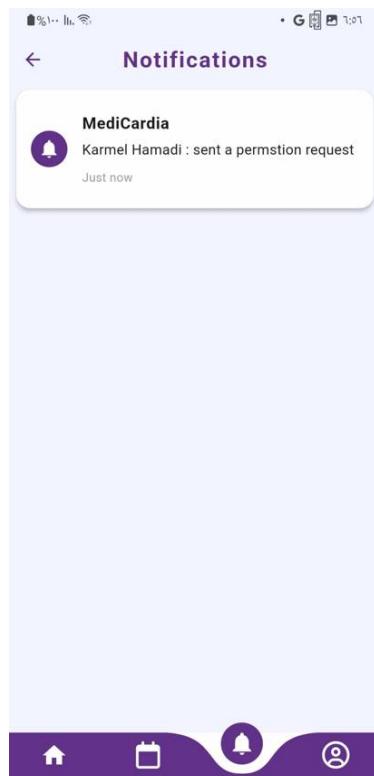


Figure 144: Show permission request notification in notification screen

If the patient accepts the request, the private information for the selected patient becomes visible to the doctor.

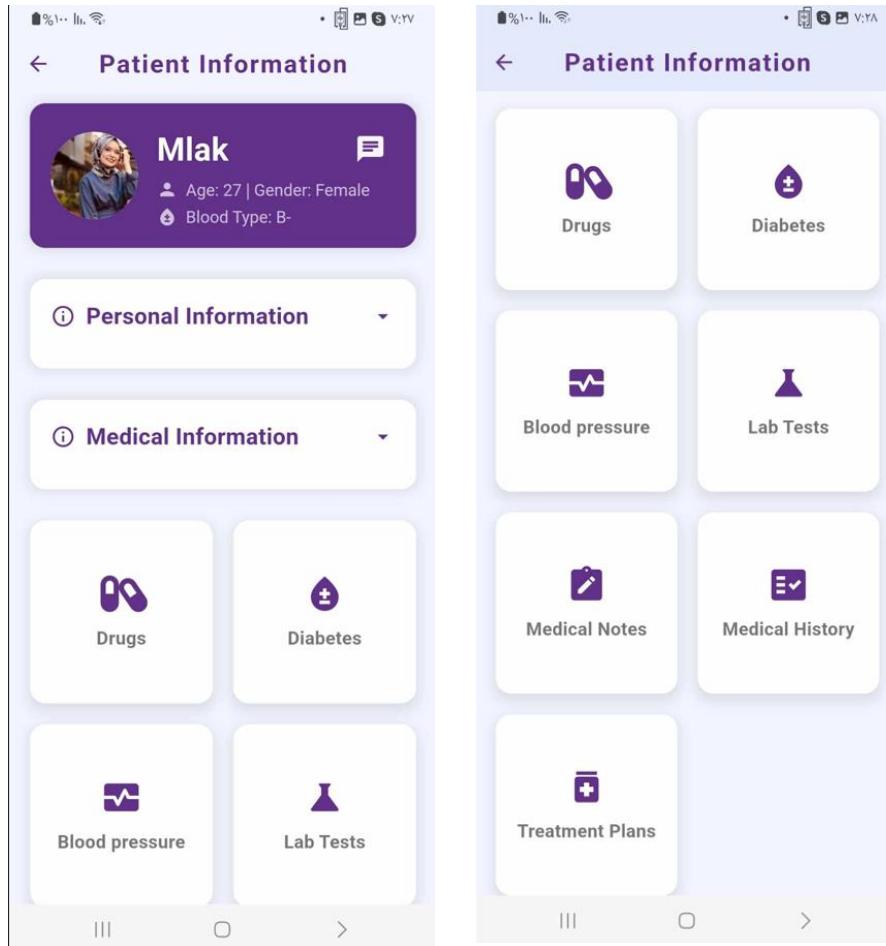


Figure 145: Patient private information become visible

## 2. Private Information:



### 1. Drugs:

When the doctor clicks on the "Drugs" button, a page is displayed showing all the drugs the patient is currently using.

- If the drug is still being used and is ongoing, it is labeled as "**Active**".
- If the drug is no longer in use or its term has ended, it is labeled as "**Expired**".

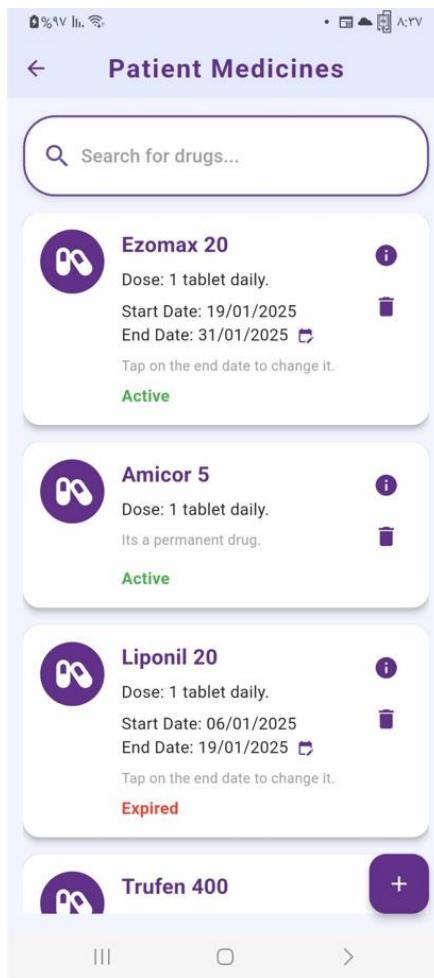


Figure 146: Patient medicines view for doctor

The following actions can be performed:

1. **Delete a Drug:** 

The doctor can delete a drug by clicking on the delete button.

2. **View Drug Details:** 

The doctor can view detailed information about a drug by clicking on the details button.

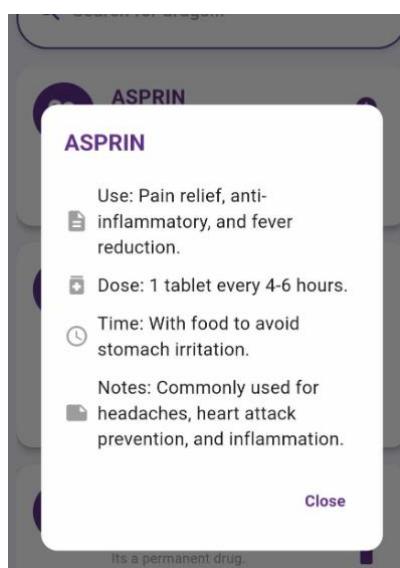


Figure 147: View details of drug

3. **Add a New Drug:** 

The doctor can add a new drug (either temporary or permanent) by clicking the "Add Drug" button.

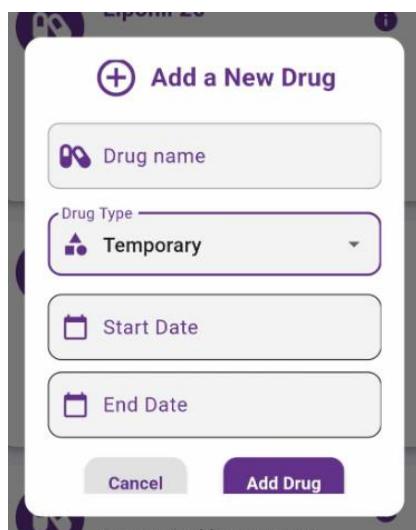


Figure 149: Doctor adds temporary drug for patient

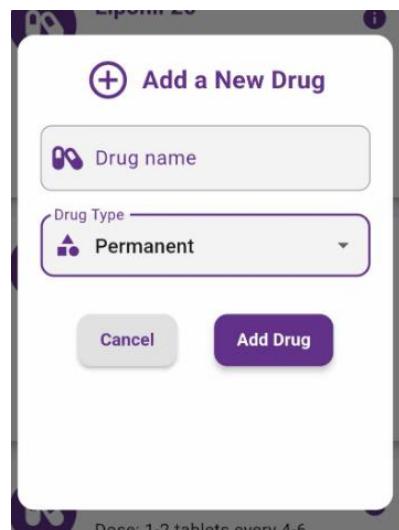


Figure 148: Doctor adds permanent drug for patient

## 1. Modify Expired Drugs:

- The doctor can **reactivate an expired drug** by updating its end date.
  - The doctor can **extend the use of a drug** that is still being used by changing its end date.
- To do so, the doctor clicks on the drug's end date and selects a new date from the calendar.

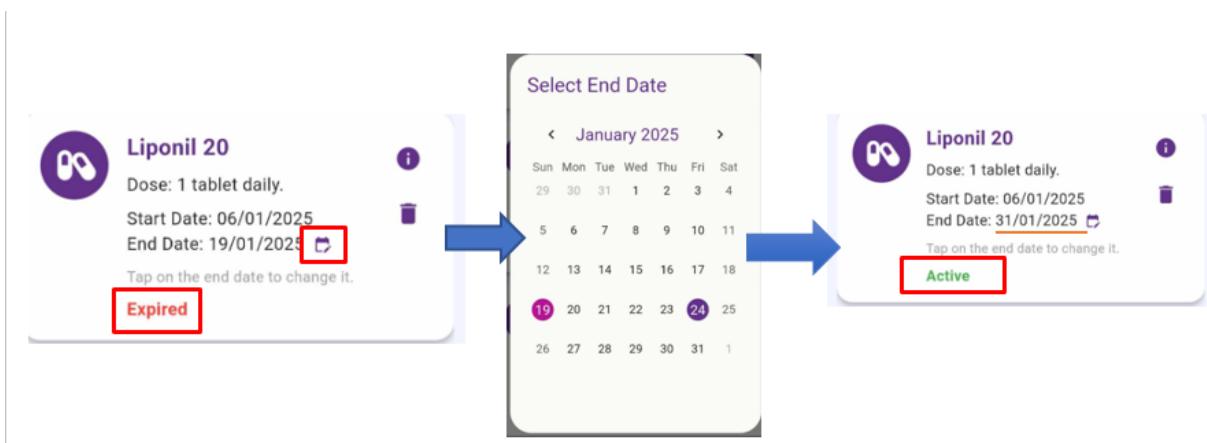


Figure 150: Doctor edit end date for patient temporary drug

## 2. Search for a Drug:

A search section is available for the doctor to search for a drug by name or other criteria.

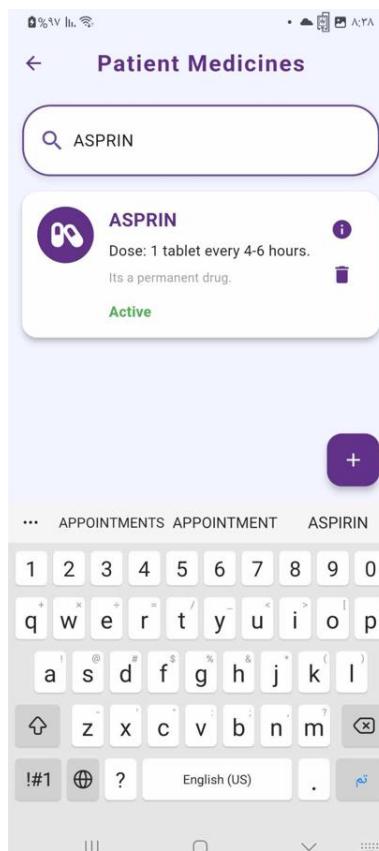


Figure 151: Search in patient drug

## 2. Blood Pressure:



Blood pressure

The doctor can track blood pressure readings for their patients, today (current day), last month and last week.

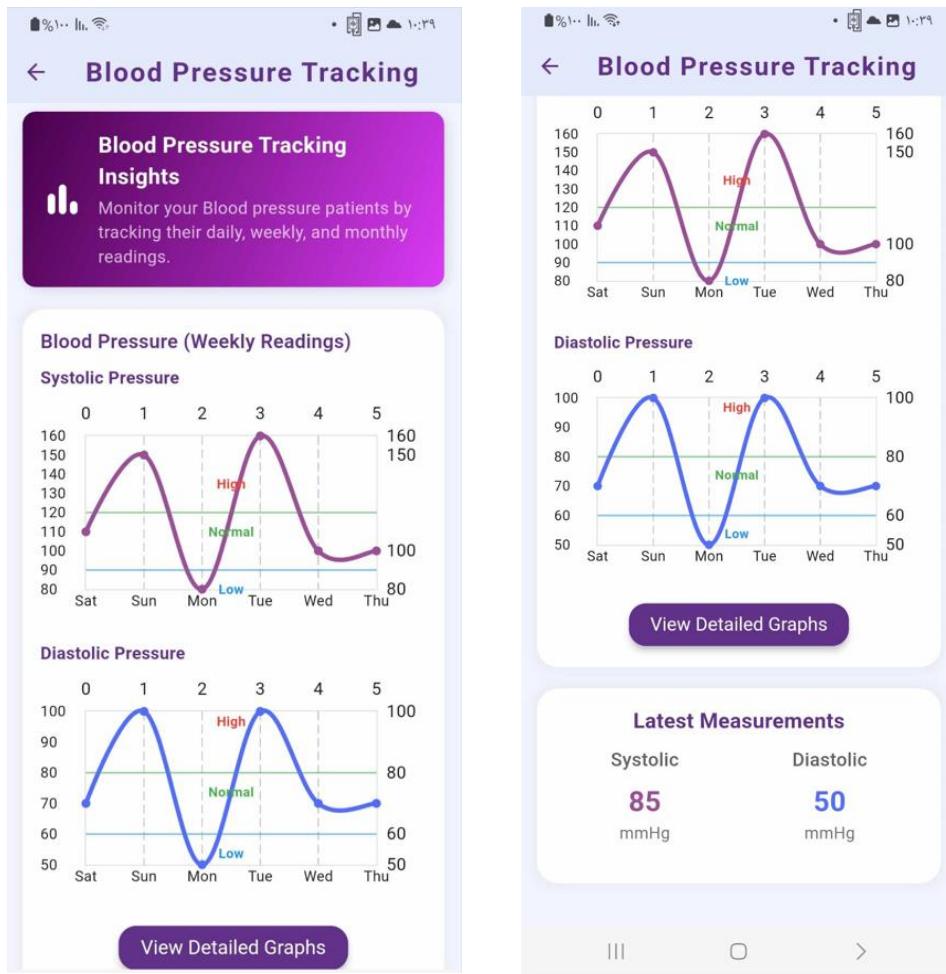


Figure 152: Patient blood pressure screen

To view detailed readings, click on

[View Detailed Graphs](#)

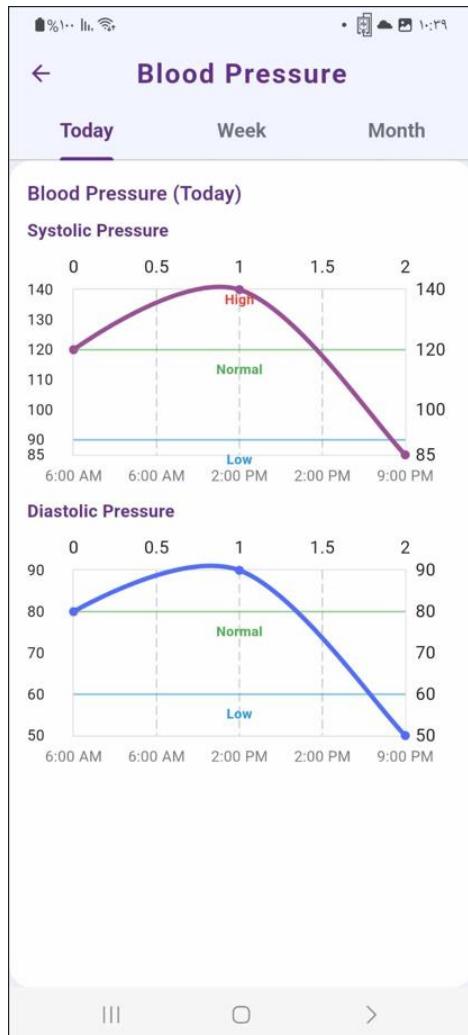


Figure 153: Chart for patient blood pressure reading for today

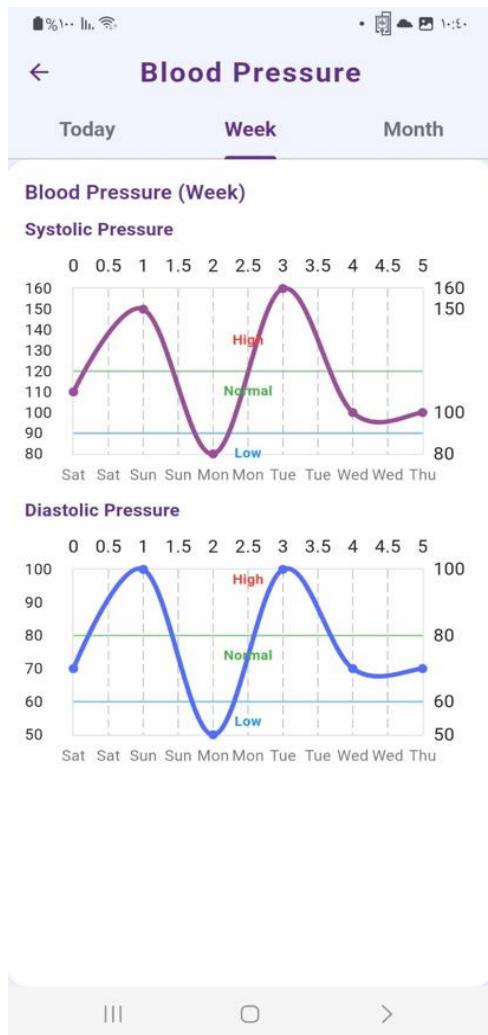


Figure 154: Chart for patient blood pressure reading for week

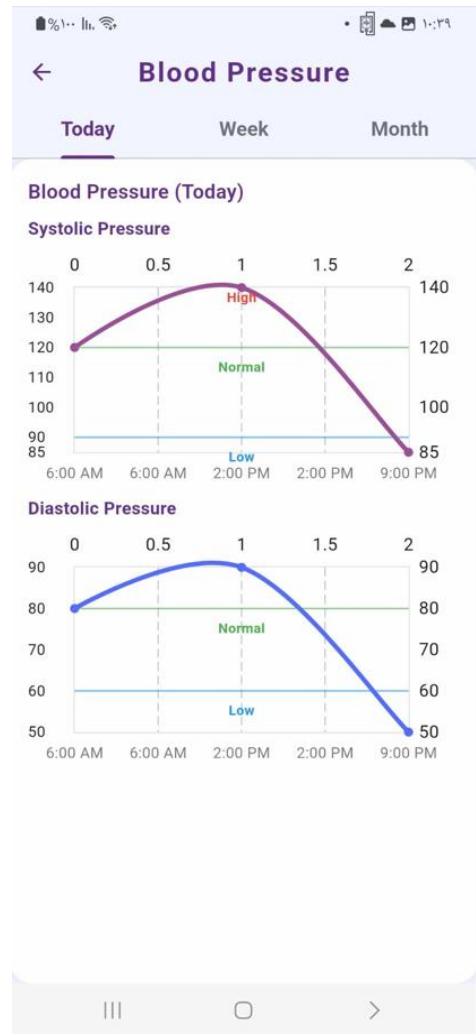


Figure 155: Chart for patient blood pressure reading for month

### 3. Diabetes:

The doctor can track blood glucose readings for their patients, today (current day), last month and last week.



Figure 156: Patient diabetes tracking screen

To view detailed readings, click on

Detailed Glucose Readings

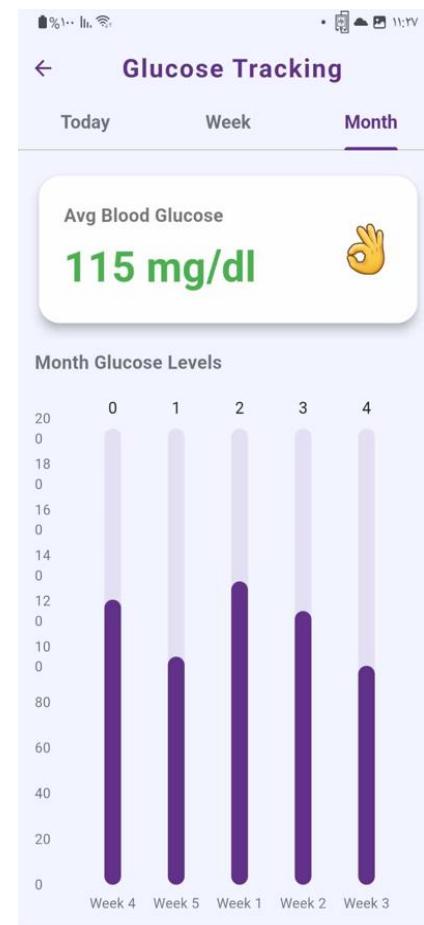
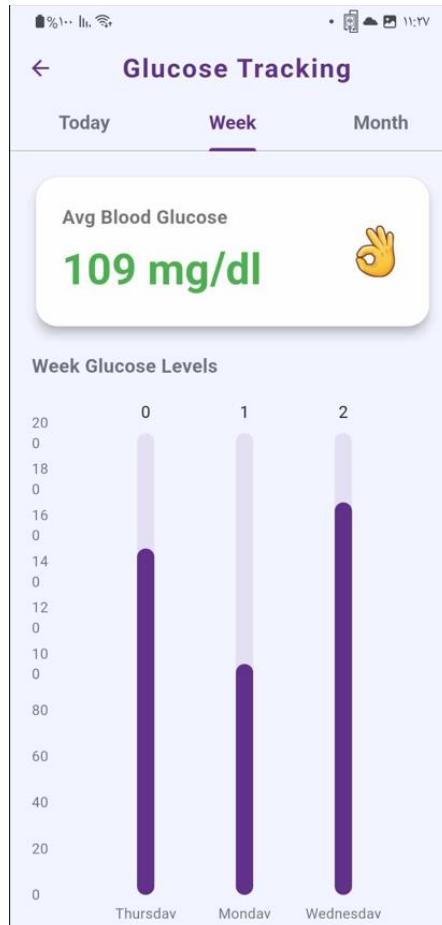
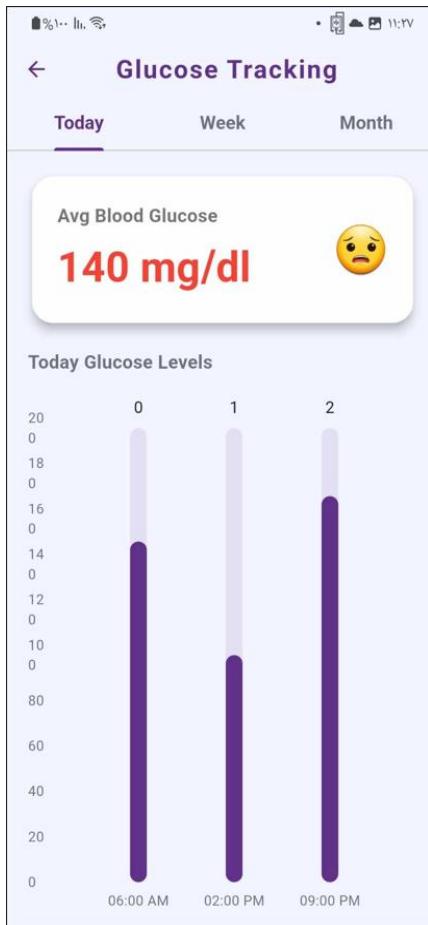


Figure 157: Chart for patient diabetes reading for today

Figure 158: Chart for patient diabetes reading for week

Figure 159: Chart for patient diabetes reading for month

4. The doctor can **view, edit, add, and delete** the following information for their patients:

- **Lab Tests:** Manage and update lab test records for the patient.
- **Medical Notes:** Record and edit notes about the patient's medical condition or progress.
- **Medical History:** Access, update, and manage the patient's medical history.
- **Treatment Plans:** Create, modify, or remove treatment plans for the patient.

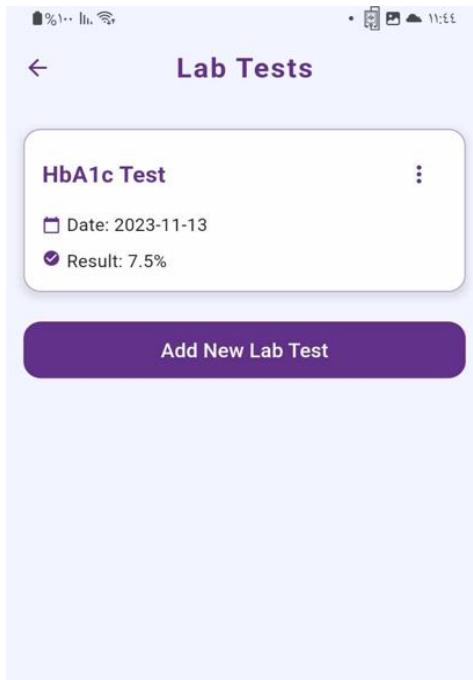


Figure 161: Patient's lab tests

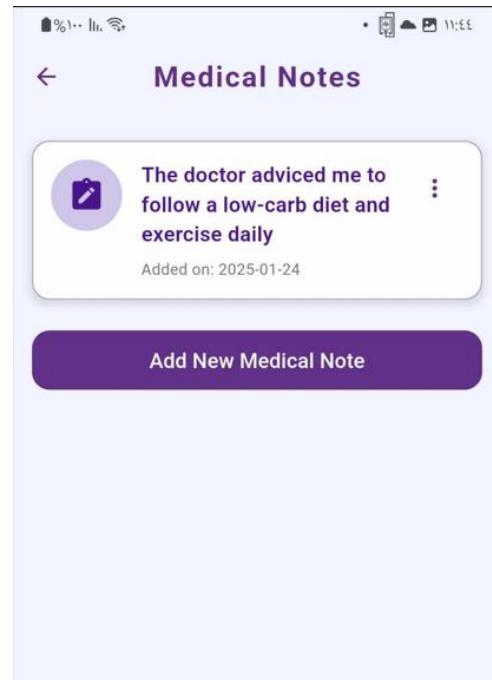


Figure 160: Patient's medical notes

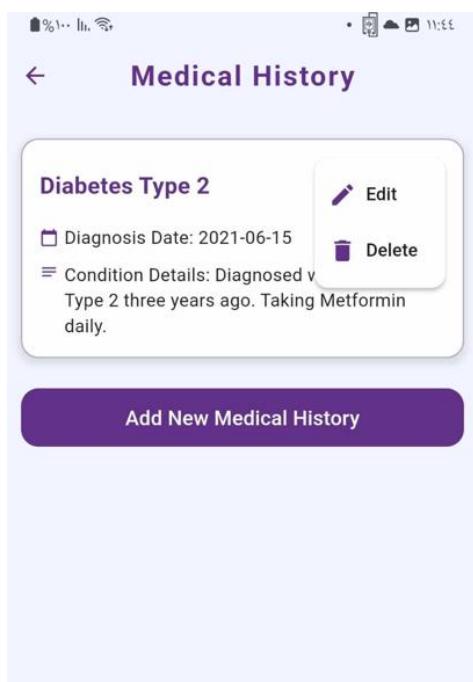


Figure 163: Patient's medical history

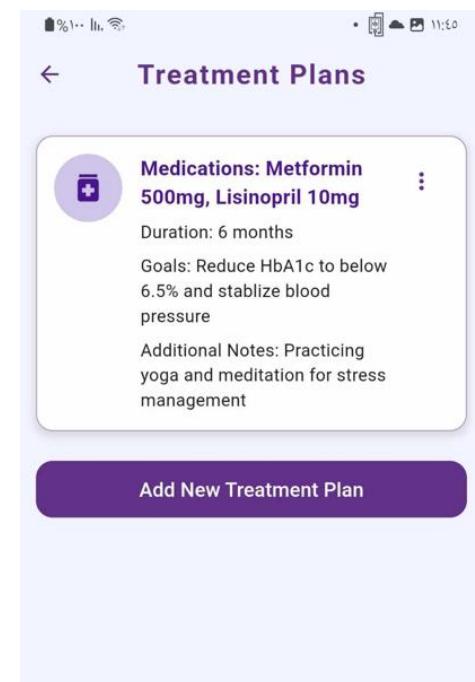


Figure 162: Patient's treatments plans

#### 4. Doctor Services:

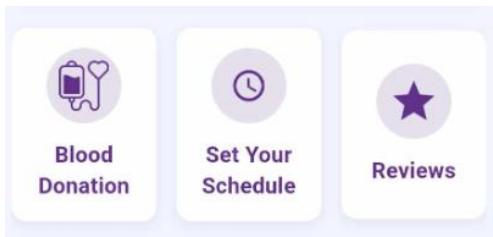


Figure 164: Doctor services

##### 1. Blood Donation:

The doctor can send blood donation requests to patients through the app. The request includes:

- **Blood Type:** The required blood type.
- **Number of Units:** The quantity of blood needed.
- **Hospital Name:** The name of the hospital where the donation is required. The app automatically displays the hospital's location on a map.

A screenshot of a mobile application screen titled "Blood Donation Request". The screen includes the following fields:

- Blood Type:** Buttons for A+, A-, B+, B-, and O. The B- button is highlighted in purple.
- Units required:** A dropdown menu showing "2 unit(s)".
- Hospital name:** A text input field containing "Specialized Arab Hospital".
- Map:** A map showing the location of the hospital with a red pin. Labels on the map include "العاصمة" (The Capital), "الجامعة" (University), "نابلس" (Nablus), and "مخيّم العين" (Al-Ein Camp).
- Request:** A large purple button at the bottom.

Figure 165: Blood donation request screen

The blood donation request is sent to:

- Users whose last eligible donation date allows them to donate (4 months for women and 3 months for men).
- Users with the same blood type as the one needed.
- Users located in the same city as the hospital.

A notification is sent to users who meet the specified criteria.

The notification appears on the **patient's notifications page**.

- The details of the blood donation request are displayed on the **patient's blood donation page**.

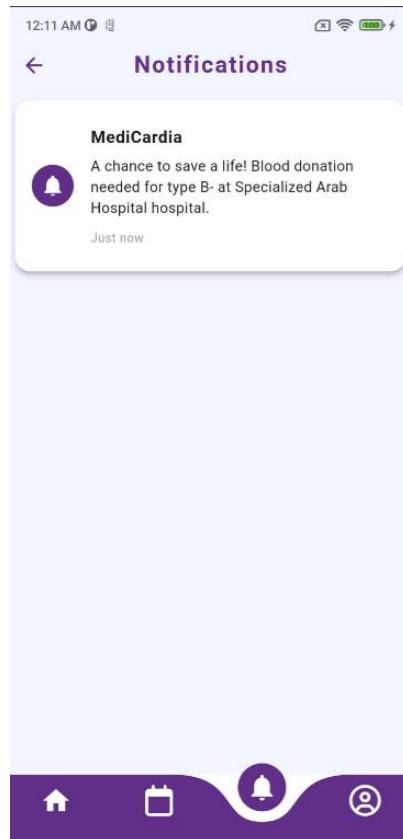
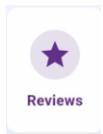


Figure 166: show blood donation request notification in notification screen

## 2. Reviews:



The doctor can view their overall rating as well as individual reviews left by patients.

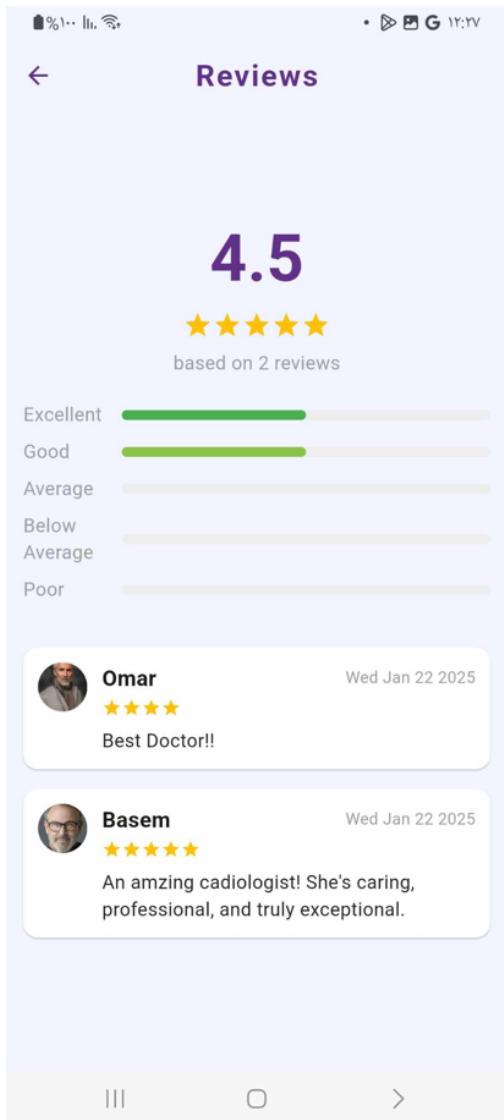


Figure 167: Doctor's reviews screen

### 3. Set Your Schedule:

The doctor can set their work schedule to allow patients to view available slots and book appointments accordingly.

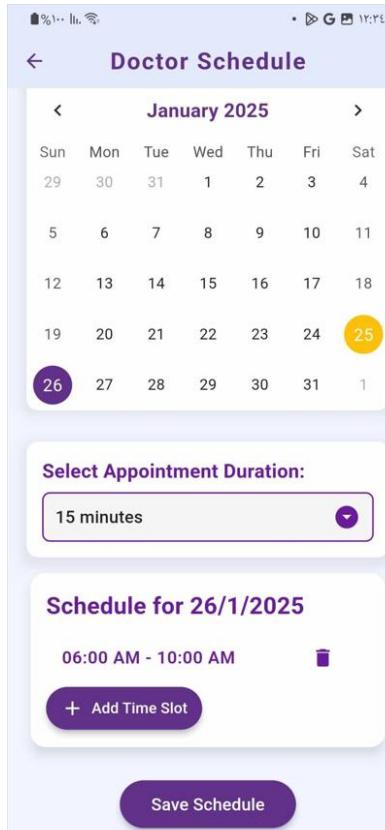


Figure 168: Doctor schedule screen

The doctor selects the **date** and the **time slots** (start time and end time) they are available on that day.

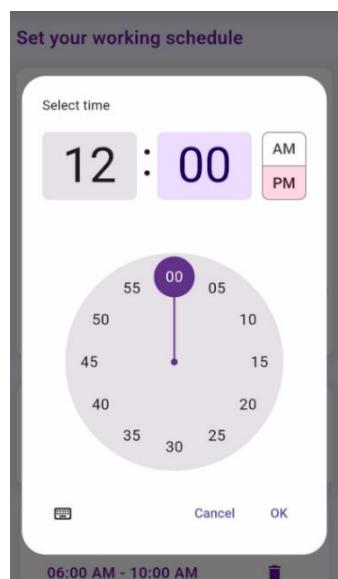


Figure 170: Select schedule start time

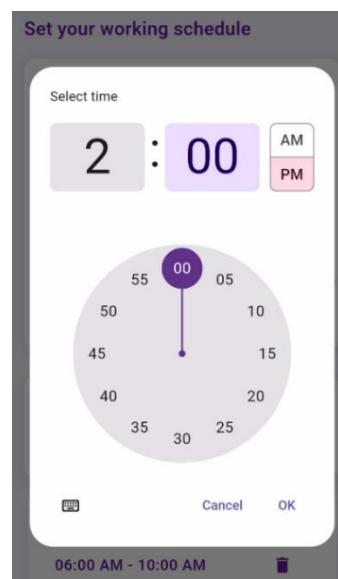


Figure 169: Select schedule end time

- The doctor also specifies the **appointment duration** (e.g., 15 minutes, 30 minutes).

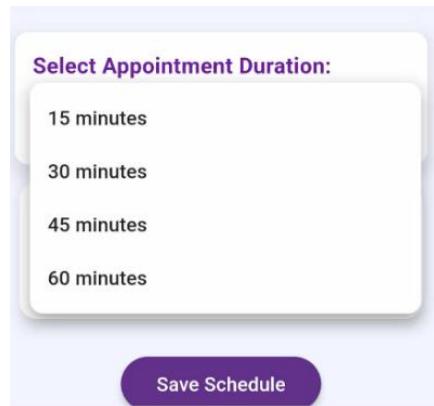


Figure 171: Select appointment duration

- This schedule determines the available booking slots for patients.

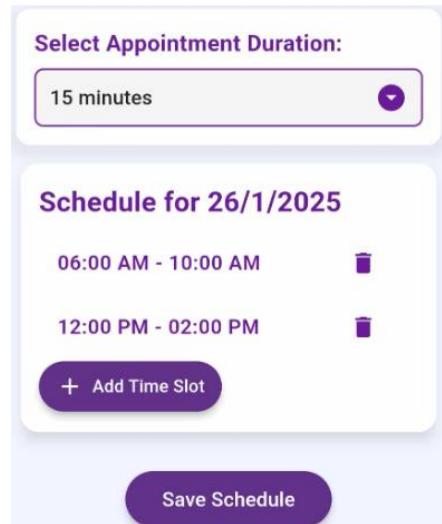


Figure 172: Doctor set schedule

## 5. Doctor Calendar:



The doctor's calendar displays all appointments for the selected date.

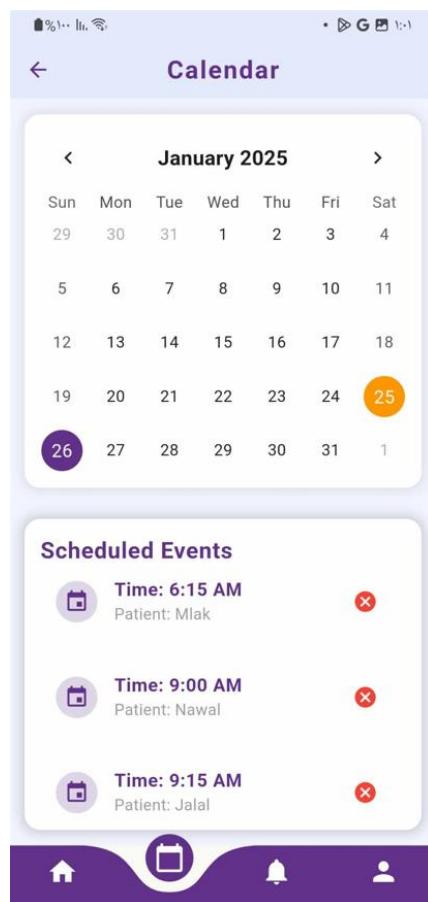


Figure 173: Doctor calendar screen

- If the appointment is completed.

- **Cancel Appointments:**

- The doctor can cancel an appointment by clicking this icon .
- When an appointment is canceled, a notification is sent to the patient informing them that the doctor has canceled their appointment.
- The patient can either delete the canceled appointment or select a new time from their **Patient Calendar** page.

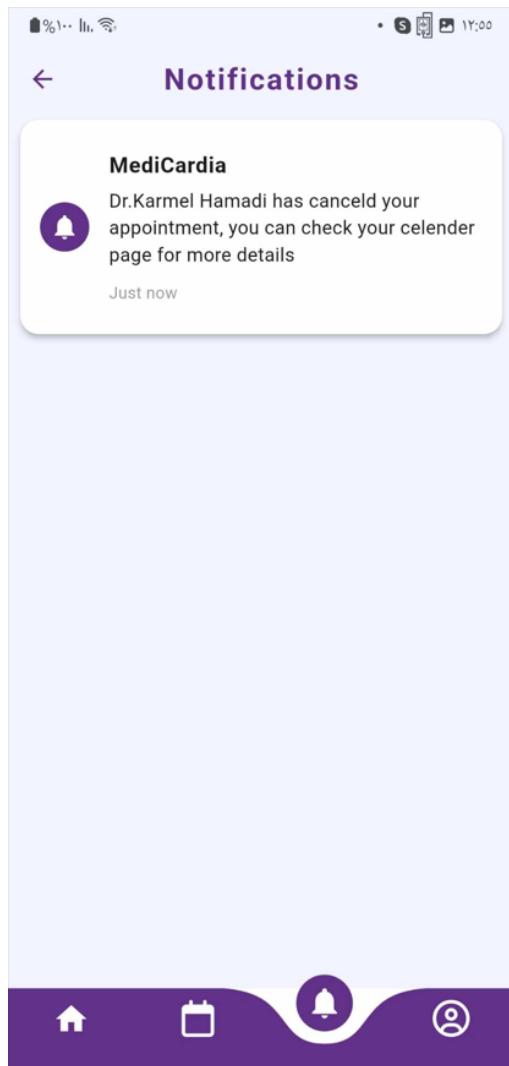


Figure 174: CanceledNotificationPage



Figure 175: canceledNotificationSentToPatient

- **View Details:**
  - Clicking on an appointment provides detailed information about it.

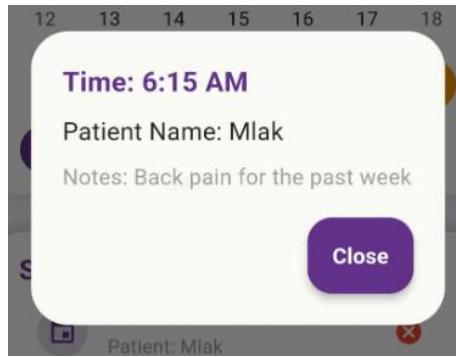


Figure 176: View appointment details

## 6. Doctor Profile:

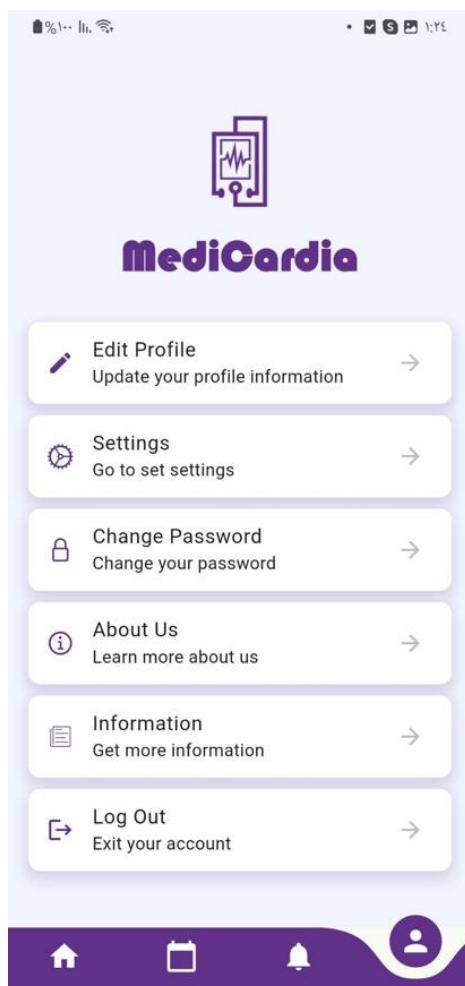


Figure 177: Doctor profile screen

The doctor can edit their profile information.

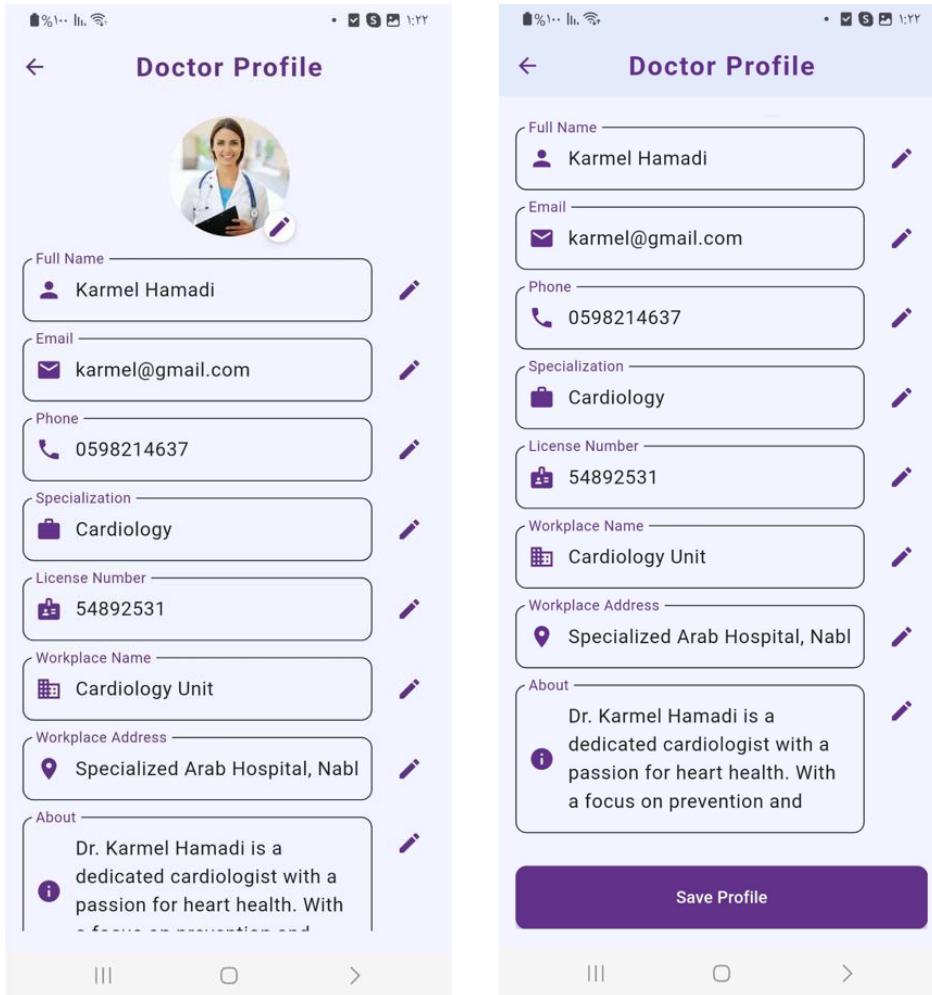


Figure 178: Edit doctor profile

Notification Settings for Doctor:

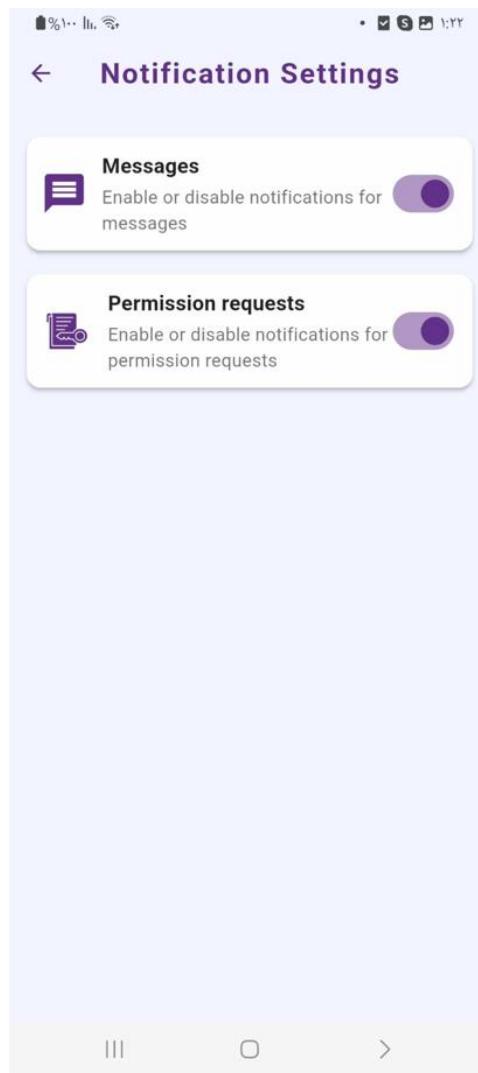


Figure 179: Doctor notification settings screen

#### 4.2.7 Admin

##### Admin home:

This is the patient's home page, which contains an accounts section, a statistics section, and a drugs section. The admin can log out by clicking on **Log Out** at the bottom of the screen.

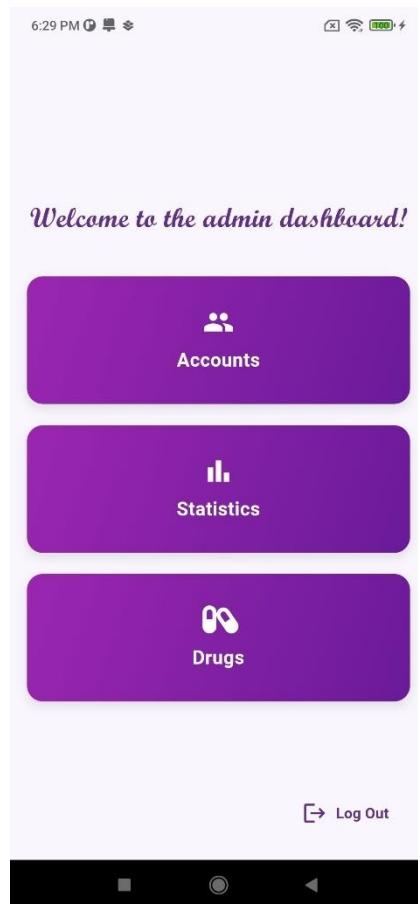
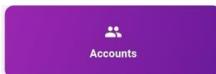


Figure 180: Admin home screen

## I. User management:



If you click on Accounts

A list of user cards will appear, showing the user's name, email, and role, with the ability to modify or delete any account by click on this this drop-down will appear or add a new account, whether for a patient or a doctor.

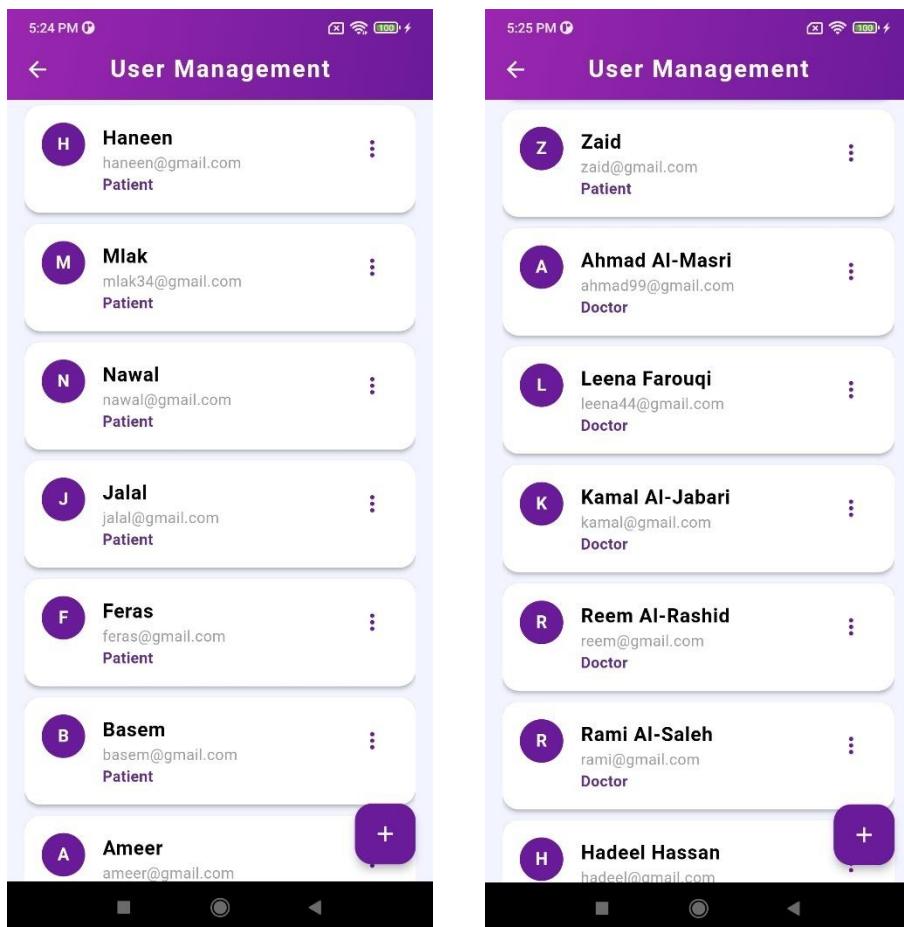


Figure 181: User management screen

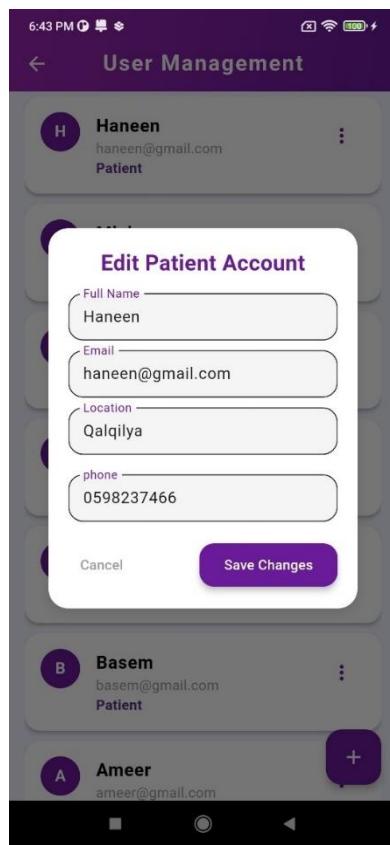


Figure 183: Edit patient account

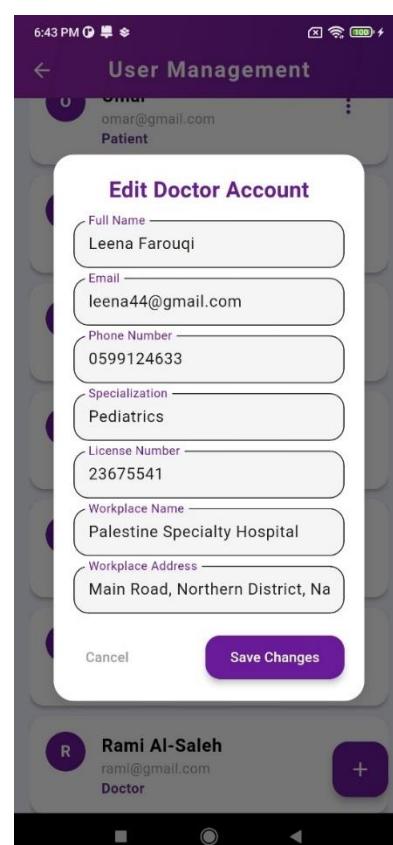


Figure 182: Edit doctor account

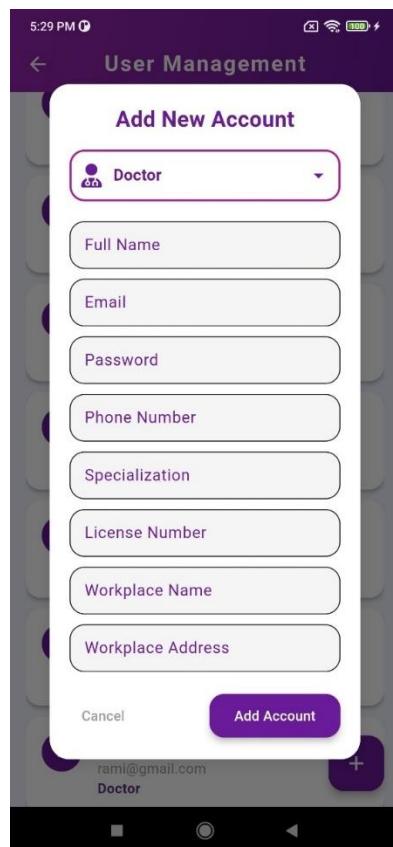


Figure 185: Add new doctor account

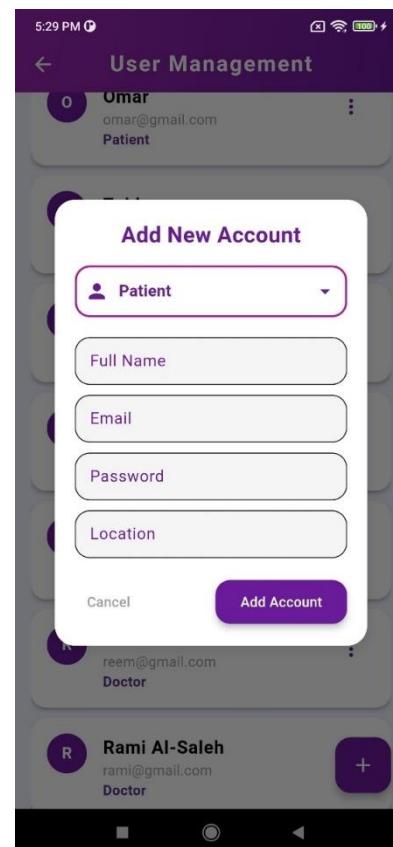


Figure 184: Add new patient account

## 2. Statistics:

Statistics

When the admin opens the statistics page, by click on

A page will appear showing the number of all patients and doctors, donation requests, and appointment bookings with doctors, then a graph showing the blood percentages of patients, then the percentage of use of features such as blood pressure, diabetes tracking, donation requests, and appointment bookings.

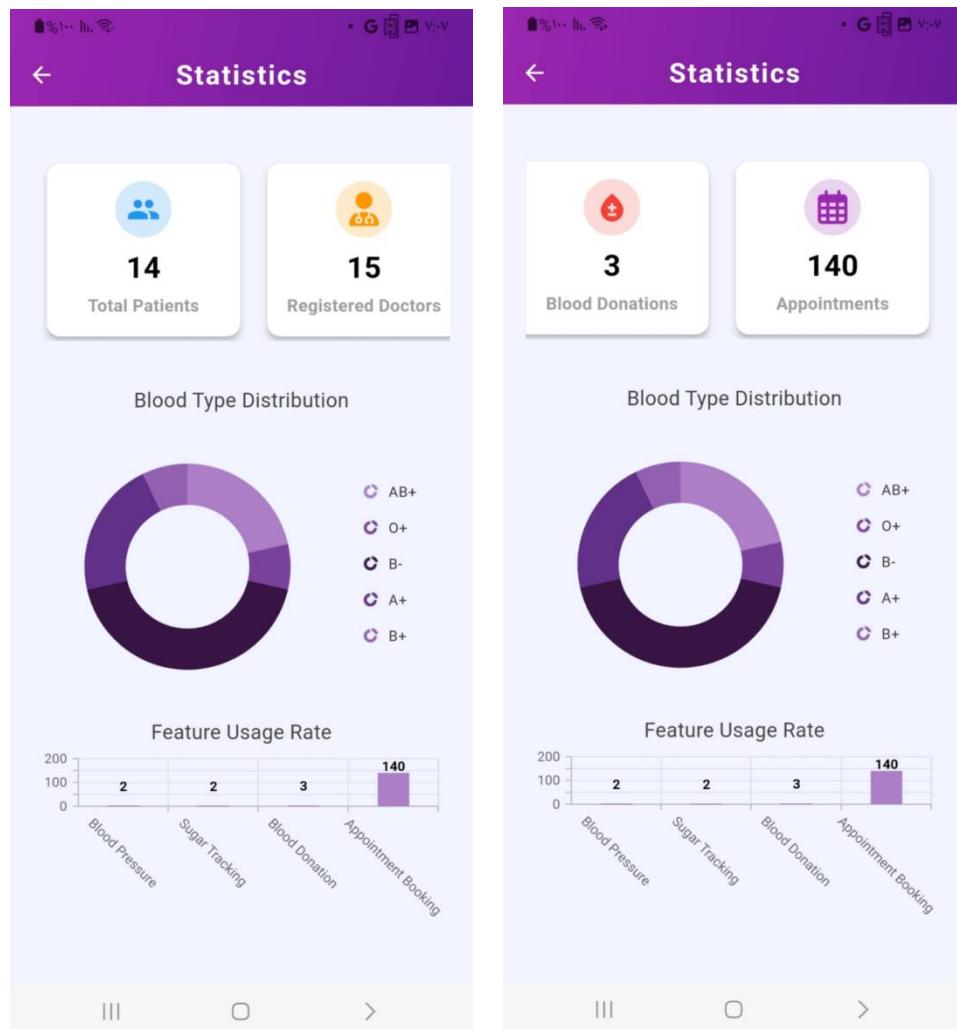


Figure 186: Admin statistics screen

## 1. Drugs:



When the admin goes to the drugs page,

A list of drug cards will appear, each containing the name and barcode of the drug, with the ability to see the details of the drug through this icon The admin can also edit, delete, with the ability to add the barcode by scanning the barcode on the drug packet, and a new drug can also be added.

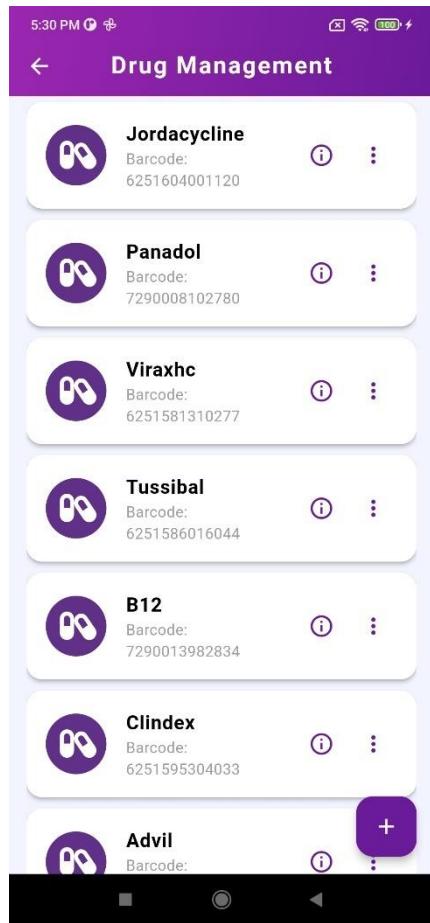


Figure 188: Admin drug management screen



Figure 187: View drug details

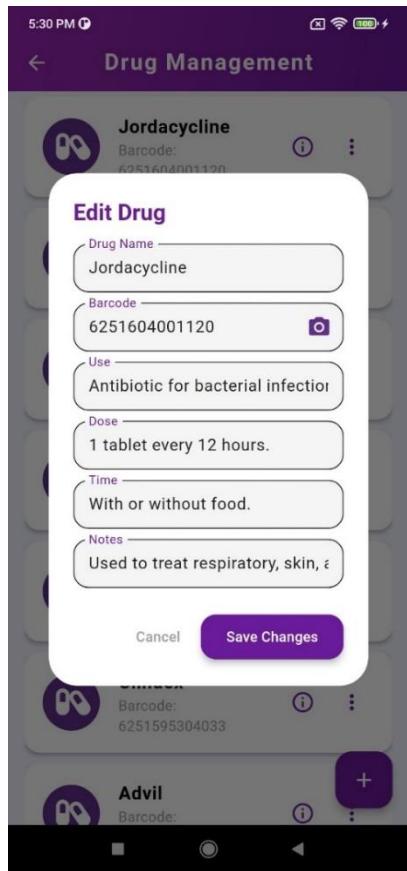


Figure 190: Admin edit drug

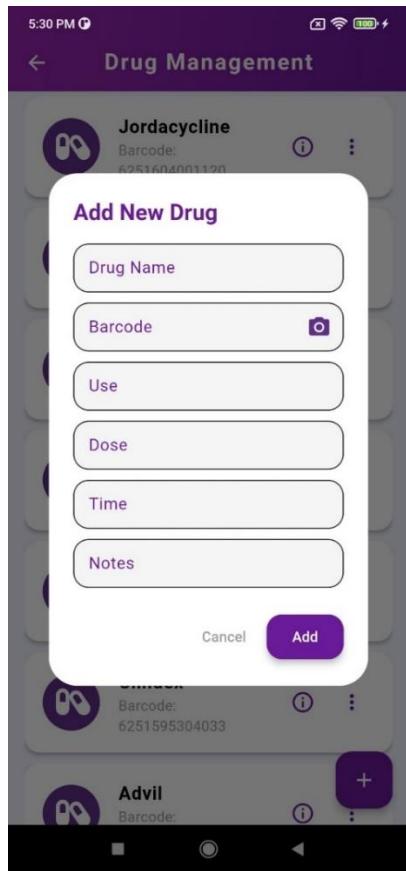


Figure 189: Add new drug

## 4.3 Web

Our application is also available in a web version. All the details we mentioned previously for the mobile version are also available in the web version. We will show some photos of the web version.

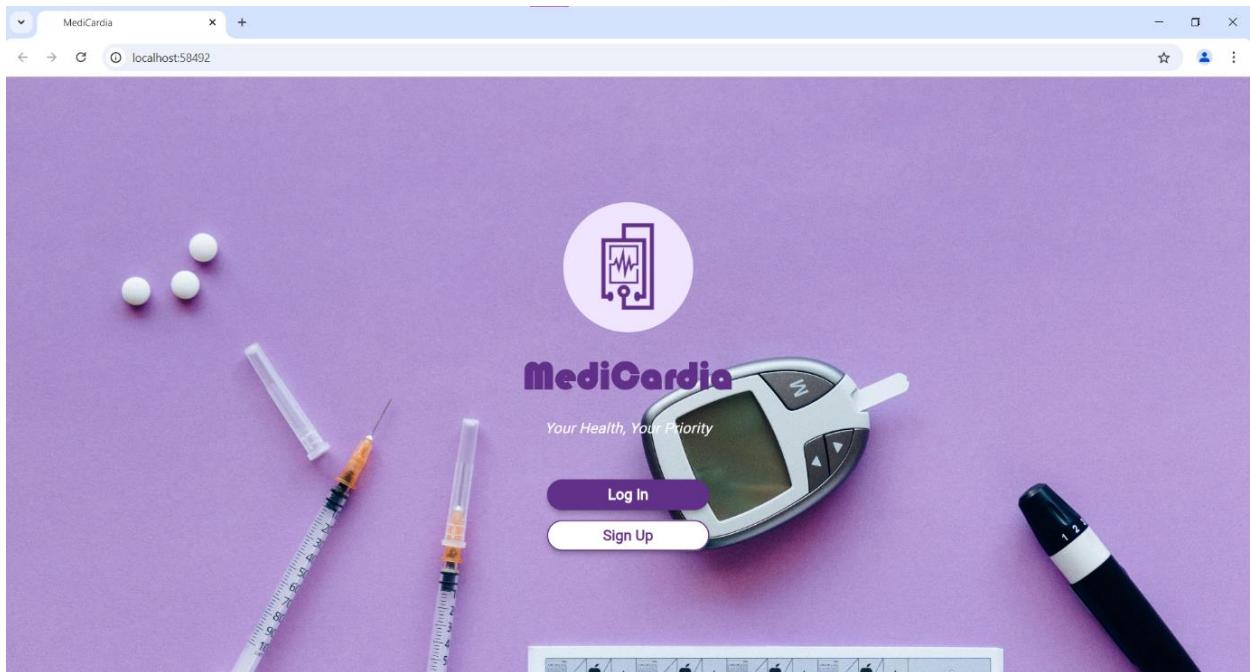


Figure 191: Splash screen - web

## Sign up & log in – Web:

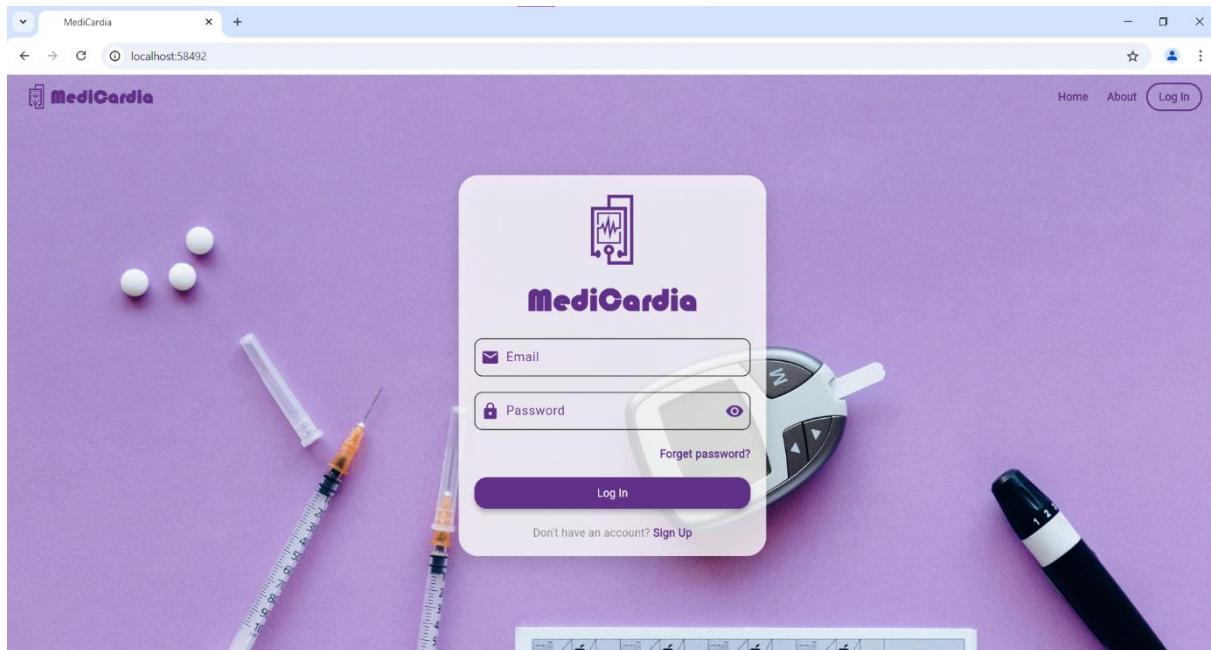


Figure 192: Login screen - web

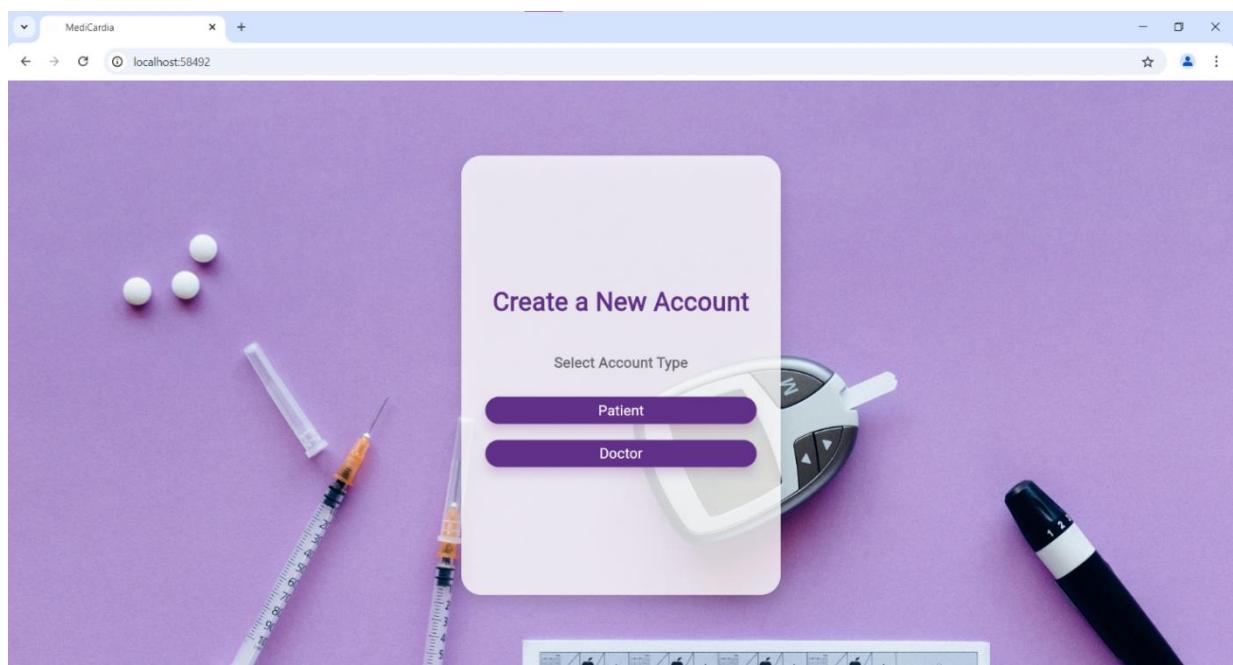


Figure 193: Select account screen - web

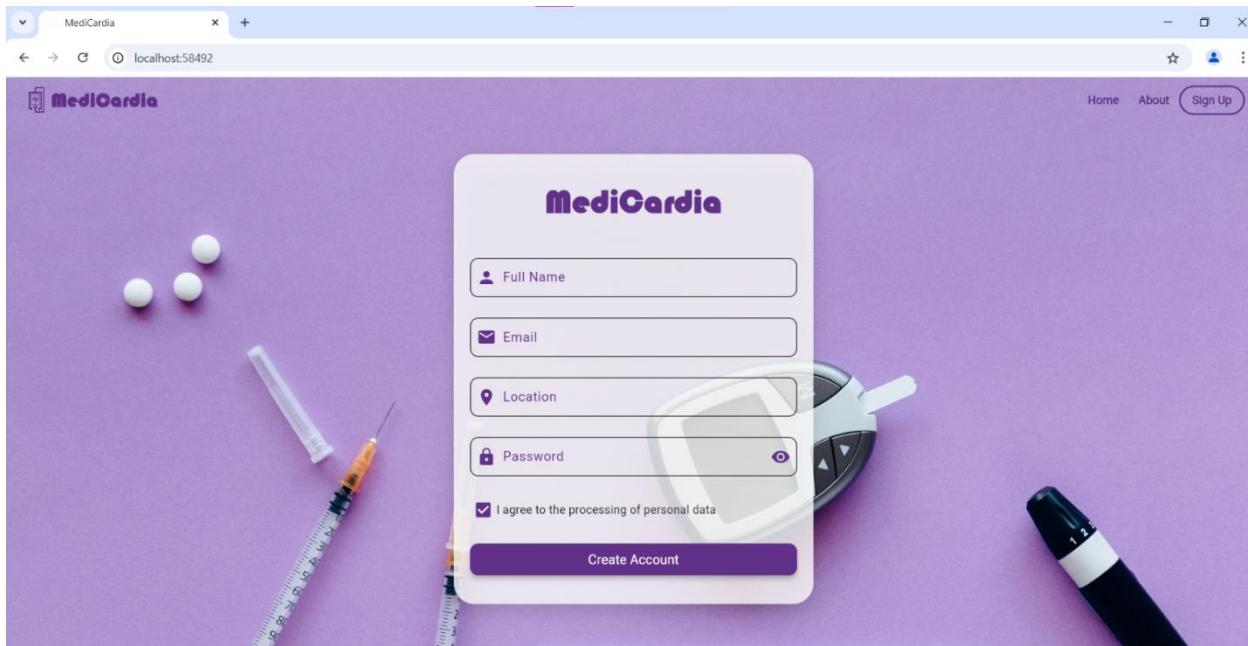


Figure 194: Patient Signup Screen - Web

A screenshot of a web browser showing the MediCardia public patient information screen. The page has a dark header with the MediCardia logo and navigation links. The main content area starts with a circular 'Add Photo' button and a user profile section for 'lolo'. Below this is a box titled 'Your MediCard public information' with a note: 'Please fill it. you should know that every doctor can see this.' Under 'Personal Info', there are four input fields: 'ID Number' (with a photo ID icon), 'Age' (with a birthday icon), 'Gender' (with a gender icon), and 'Phone Number' (with a phone icon). Under 'Medical Info', there is a dropdown menu for 'Blood Type' with the placeholder 'Select Blood Type'. Below this is a section for 'Select Chronic Diseases' with several buttons: 'Diabetes' (blue), 'Blood Pressure' (purple), 'Asthma' (green), 'Cancer' (orange), 'Kidney Failure' (pink), and 'None' (grey).

Figure 195: Public patient information screen1 - web

lolo

Your MediCard public information  
Please fill it, you should know that every doctor can see this.

Select Chronic Diseases

- Diabetes
- Blood Pressure
- Asthma
- Cancer
- Kidney Failure
- None

Allergies

Add Drugs

Drug Name

Drug Type

Last Donation Date

Submit

Figure 196: Public patient information screen2 - web

Your MediCard Private Information  
Enter your private medical information securely.  
Your data is fully protected and cannot be accessed without your permission.

Medical History

Medical Condition Name

Diagnosis Date

Condition Details

+ Add New Medical Condition

Lab Tests

Test Name

Test Result

Test Date

+ Add New LabTest

Medical Notes

Figure 197: Private patient information screen1 - web

## Patient home – Web:

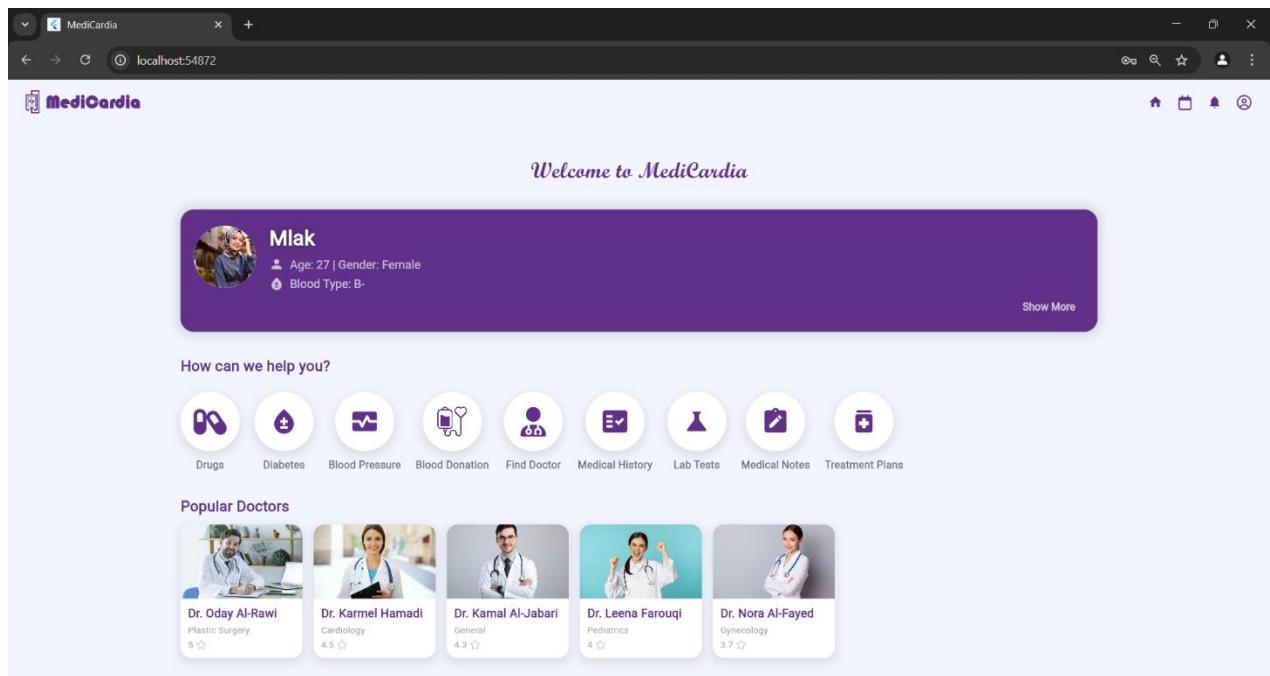


Figure 198: Patient home - web

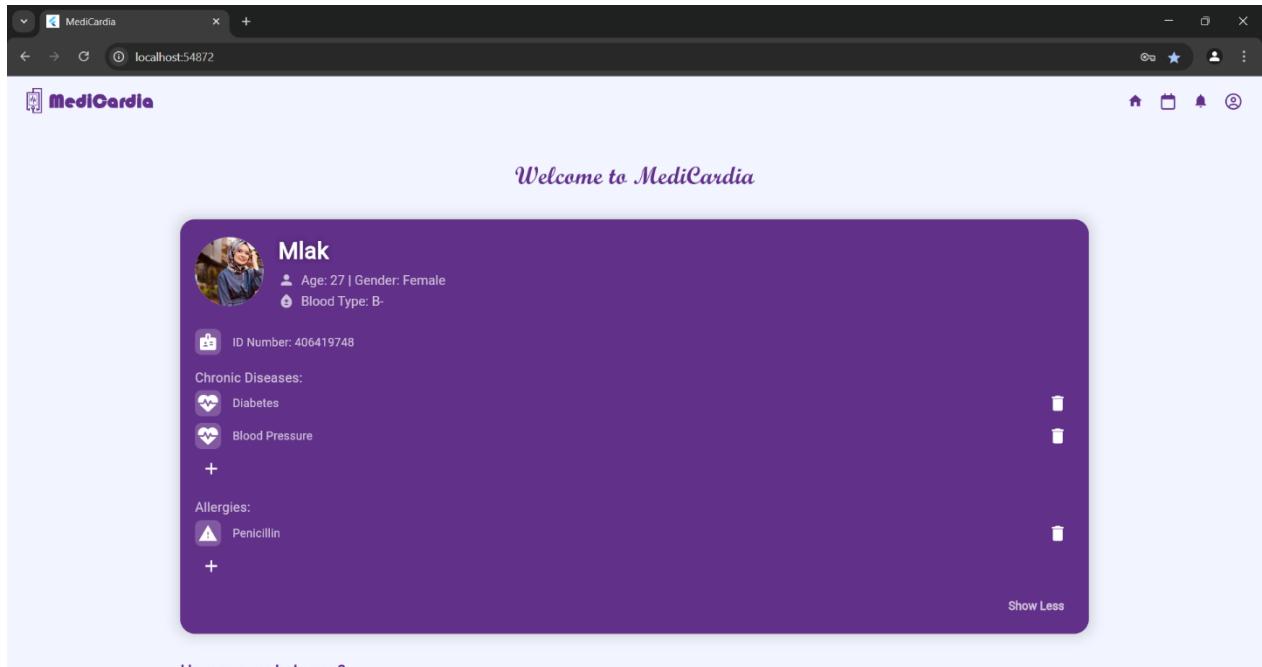


Figure 199: Patient card - web

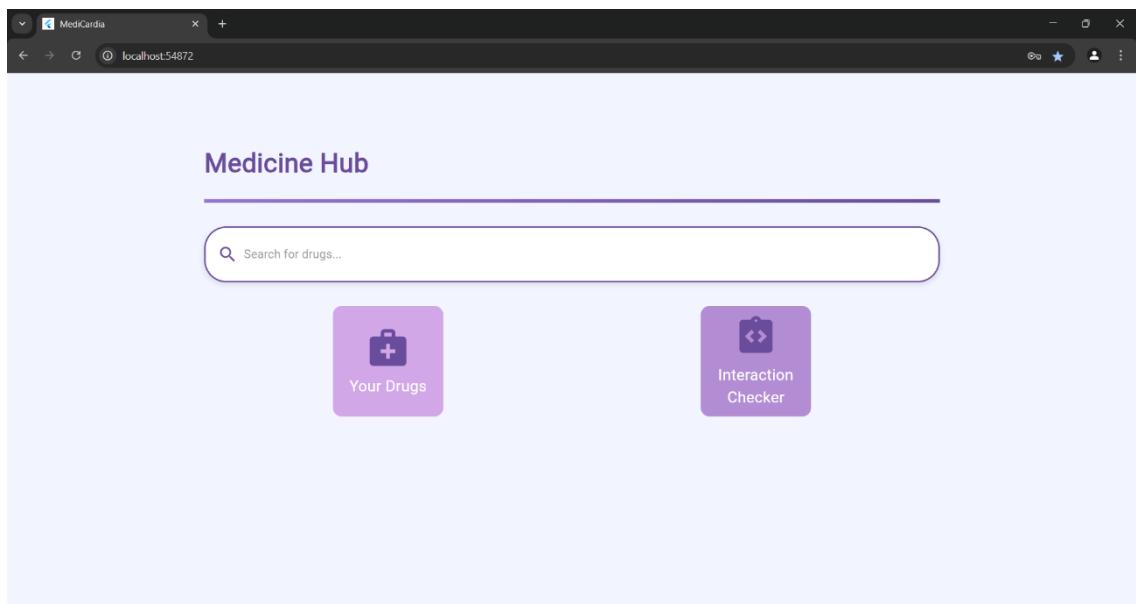


Figure 200: Medicine hub - web

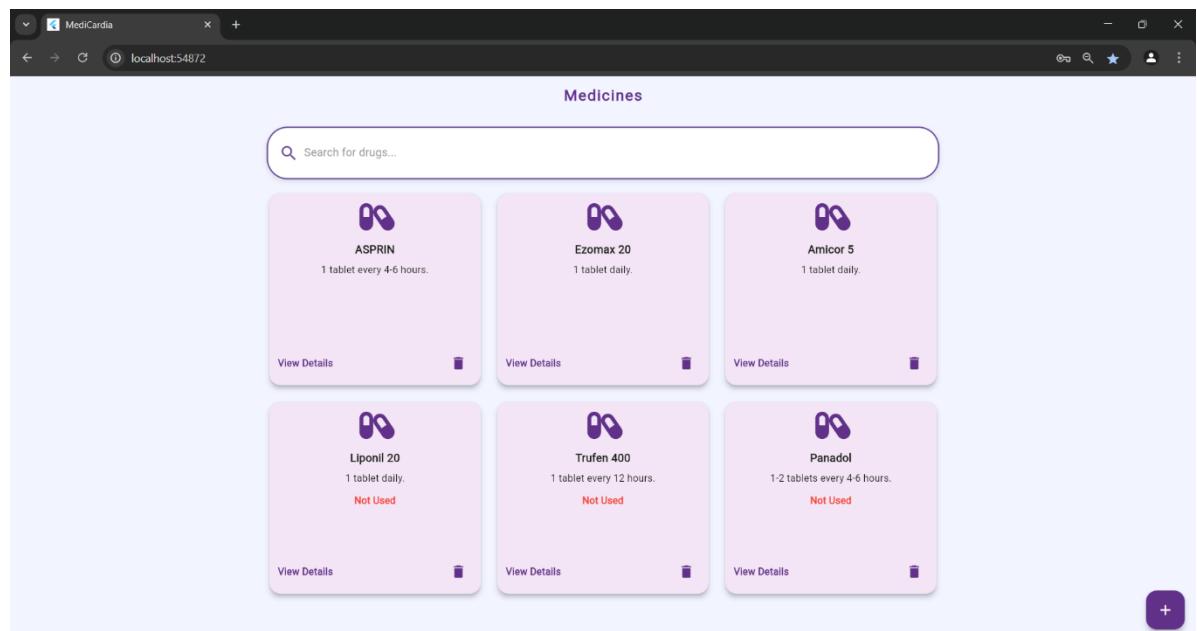


Figure 201: Show patient's drugs - web

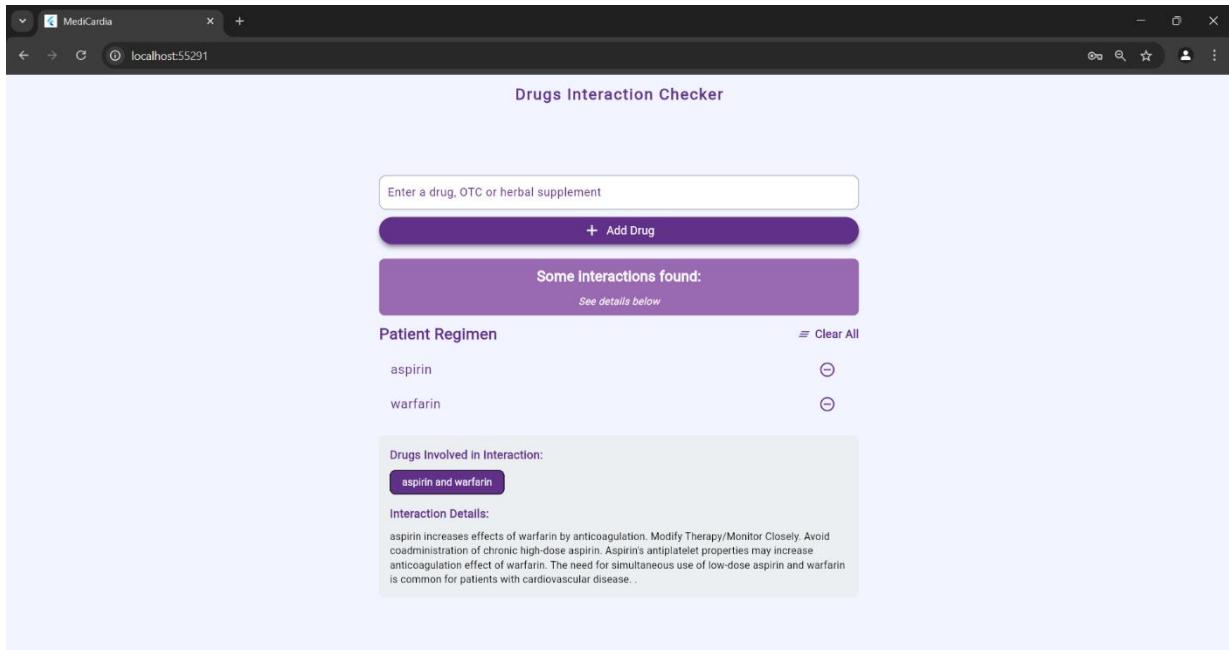


Figure 202: Two-drug interaction check - web

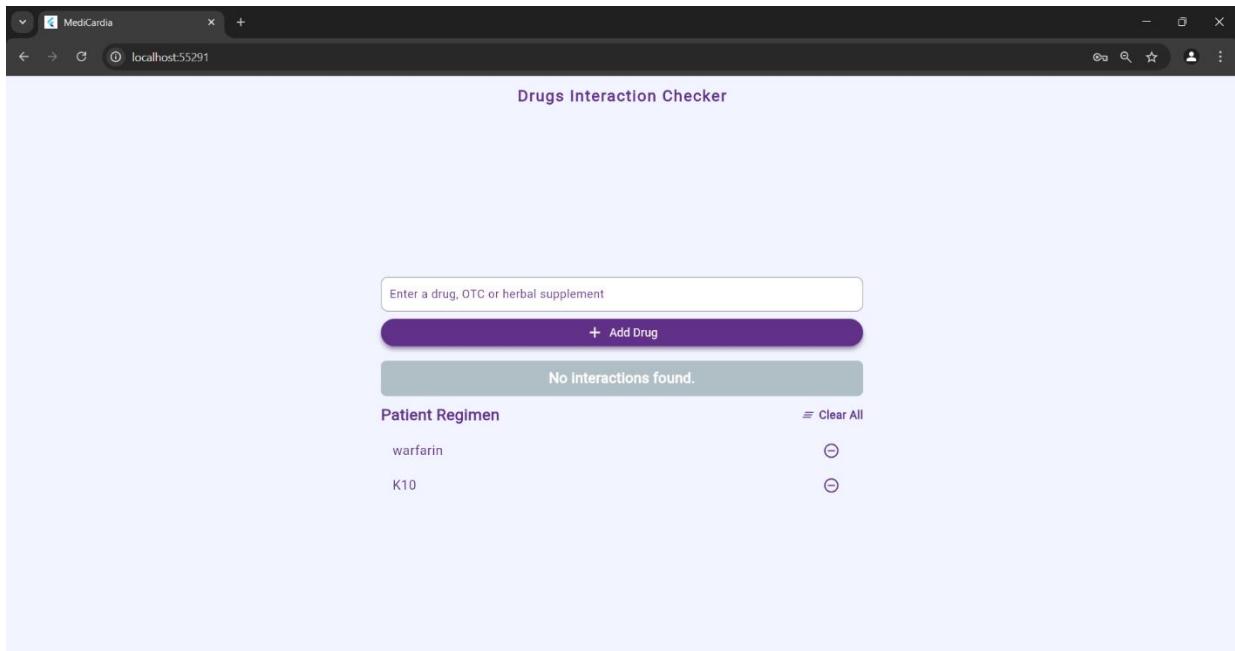


Figure 203: Example of no interactions found - web

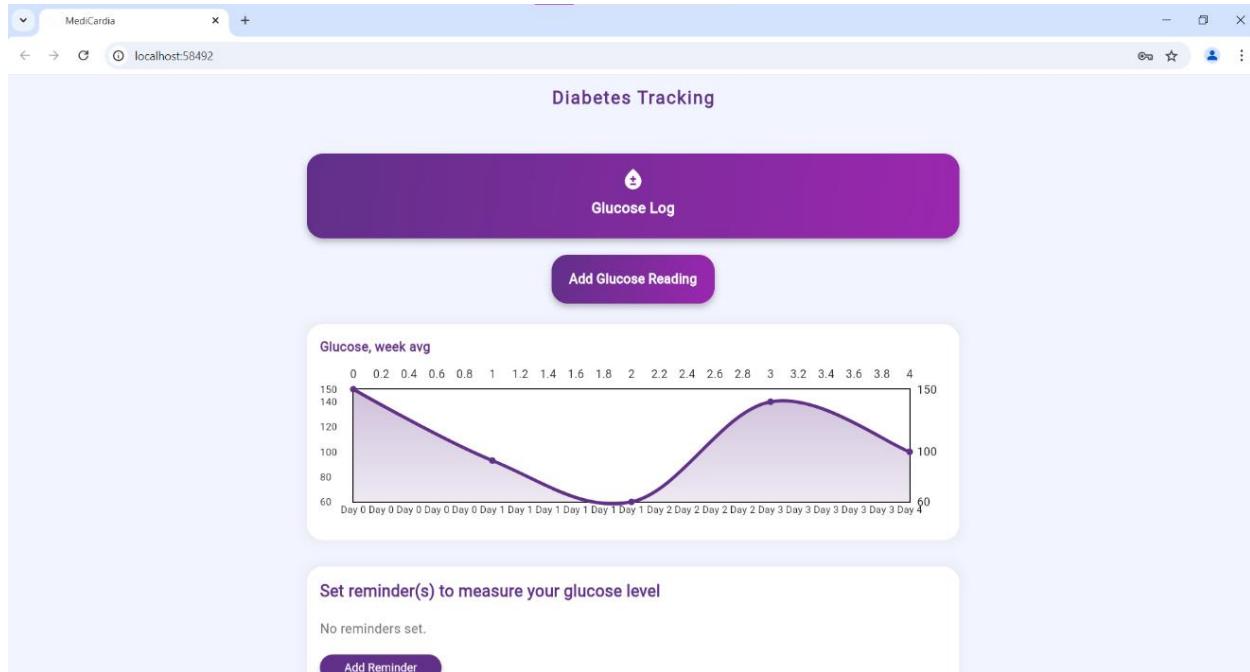


Figure 204: Diabetes tracking screen - web

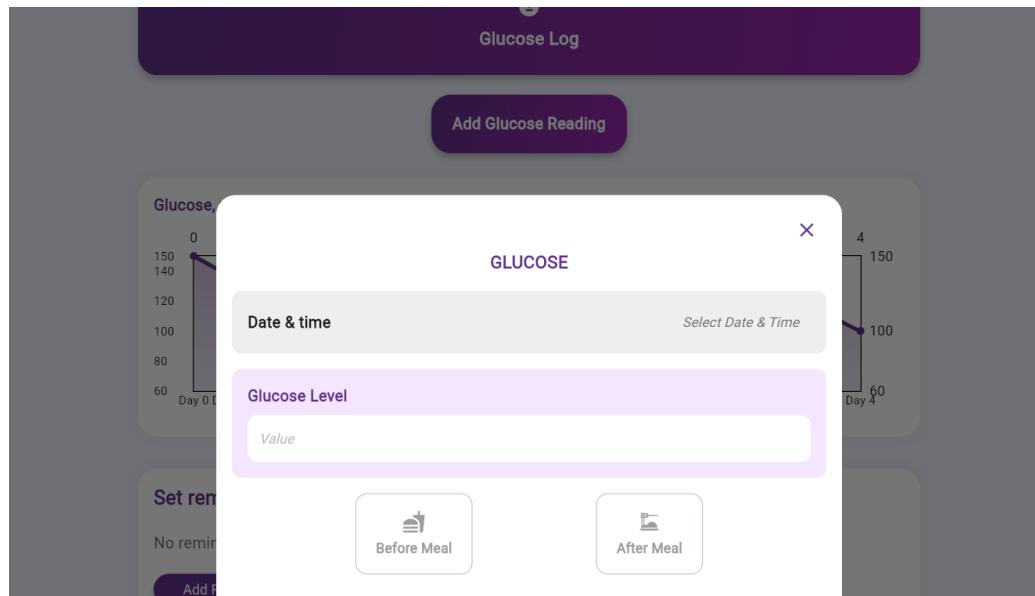


Figure 205: Add glucose reading - web

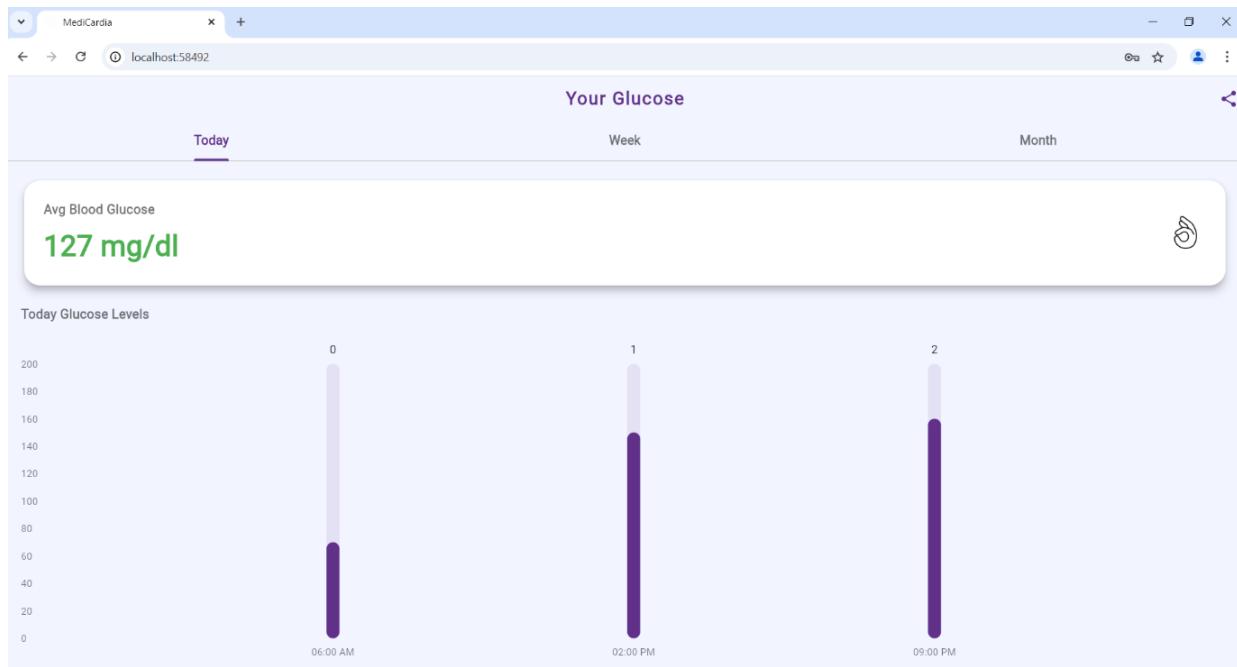


Figure 206: Today glucose levels - web



Figure 207: Week glucose levels - web

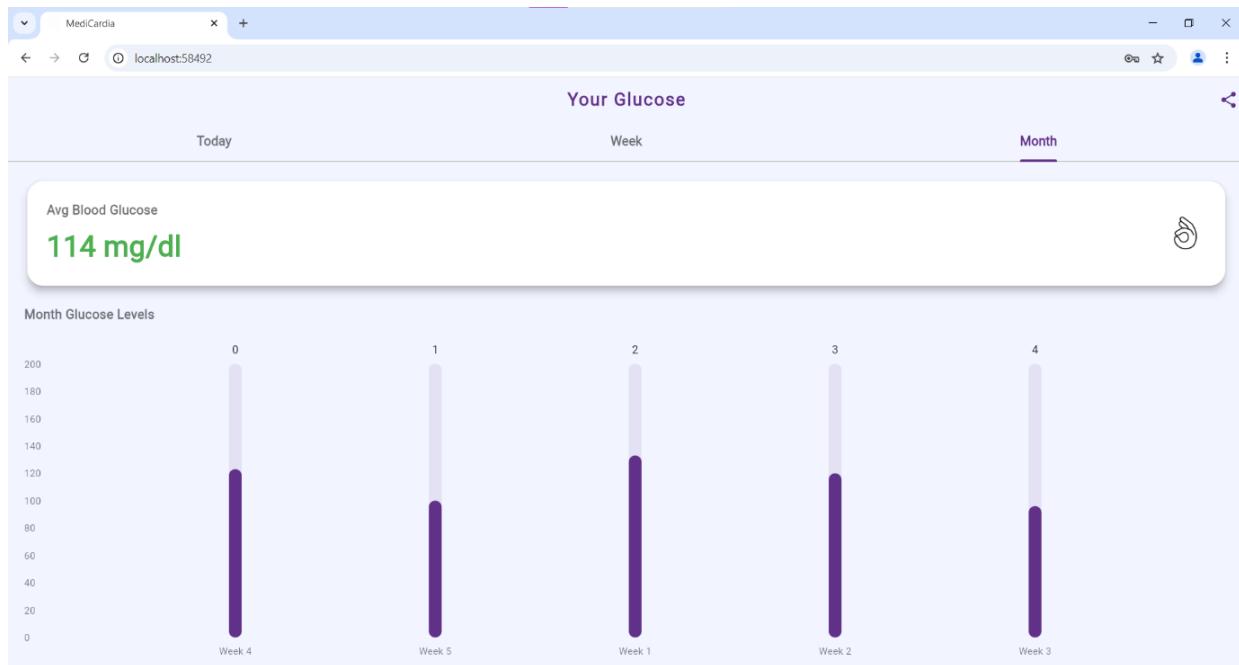


Figure 208: Month glucose levels - web

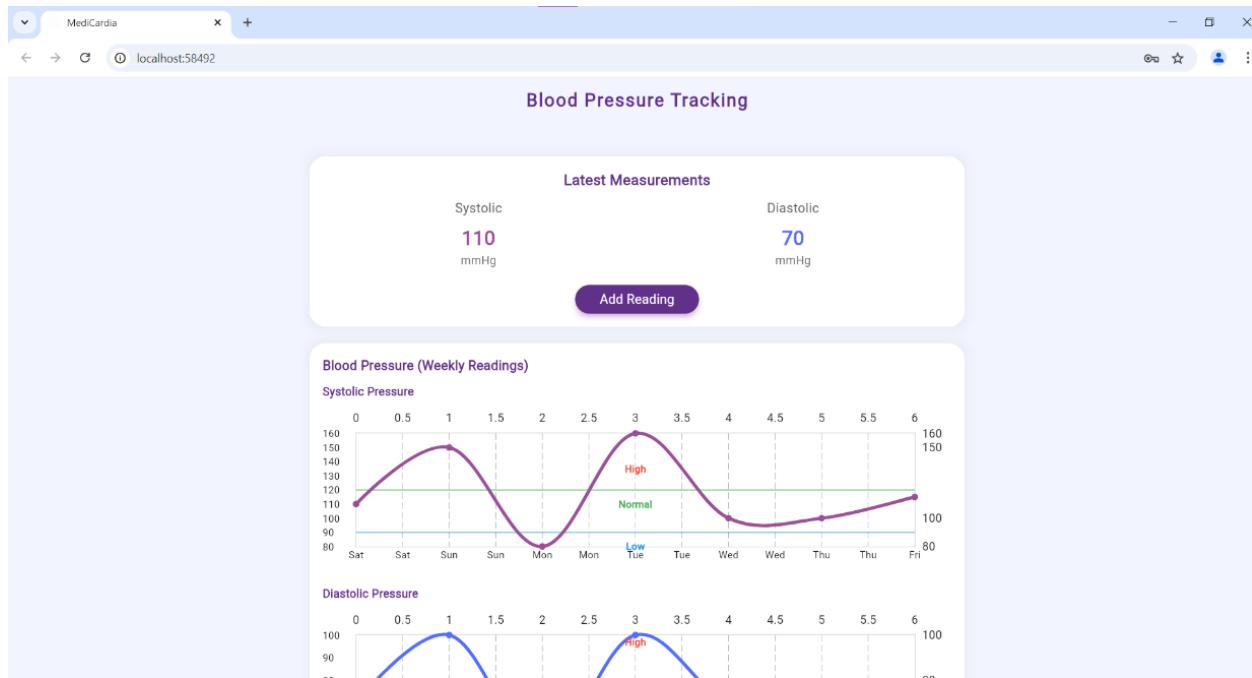


Figure 209: Blood pressure tracking screen1 - web



Figure 210: Blood pressure tracking screen2 - web



Figure 211: Graph of blood pressure readings for the today - web



Figure 212: Graph of blood pressure readings for the week - web



Figure 213: Graph of blood pressure readings for the month - web

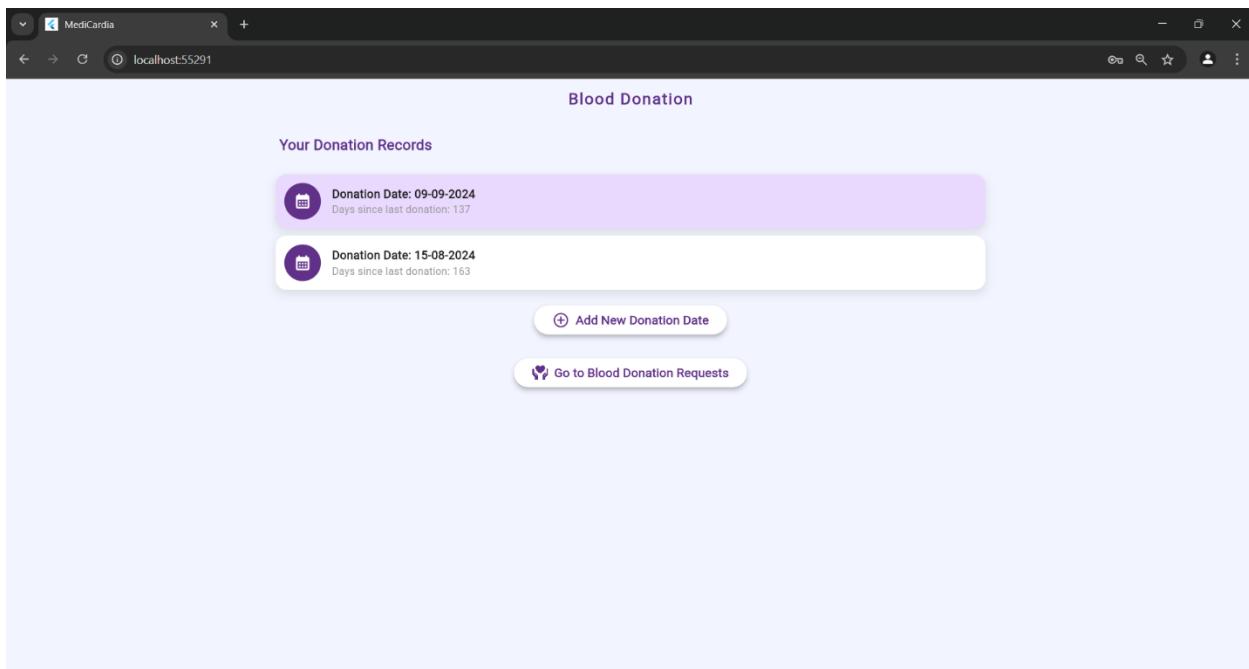


Figure 214: Blood donation screen - web

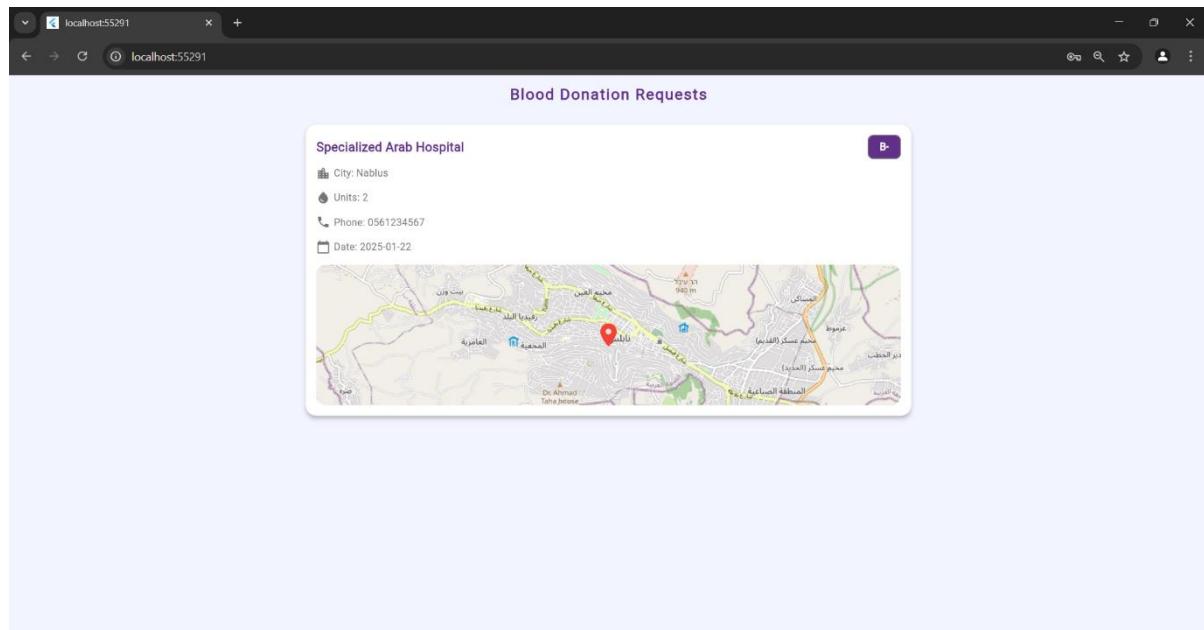


Figure 215: Blood donation requests screen - web

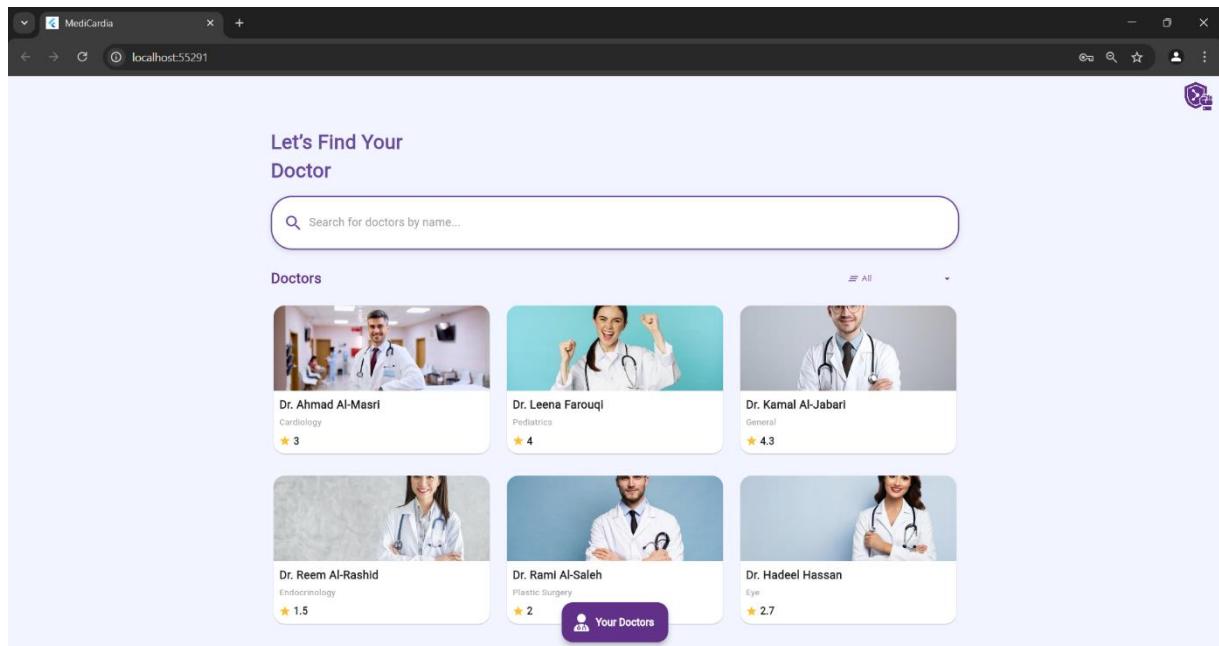


Figure 216: Find doctor screen - web

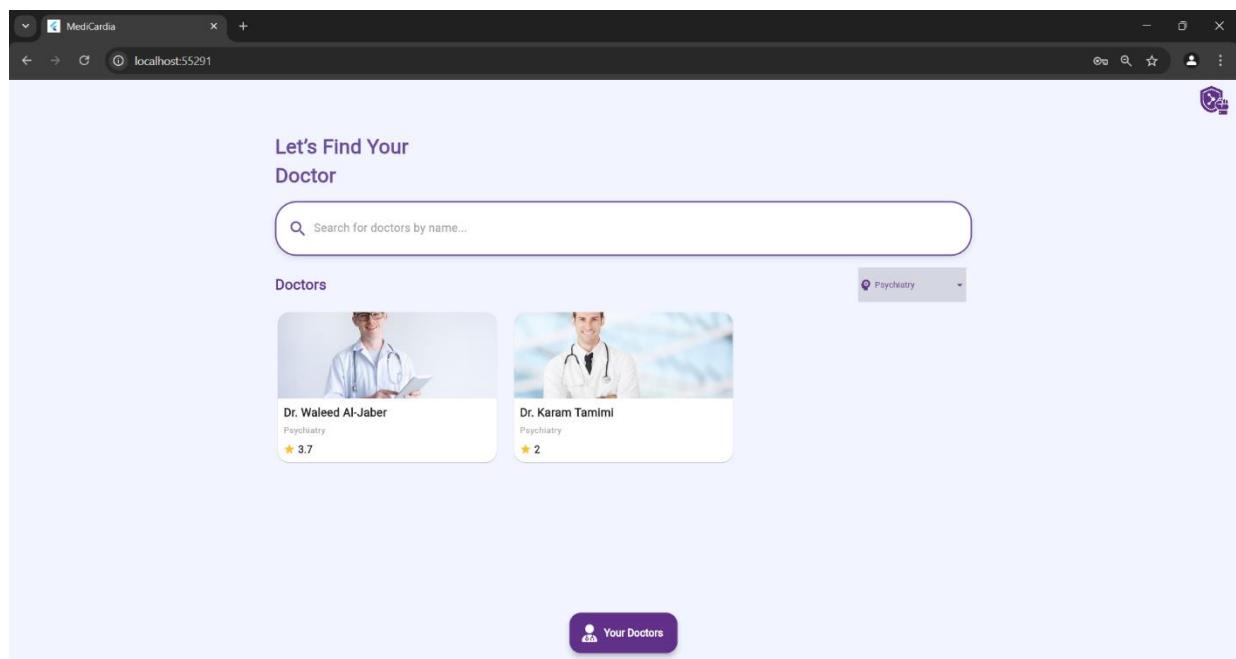


Figure 217: Filter doctors by cardiology specialty - web

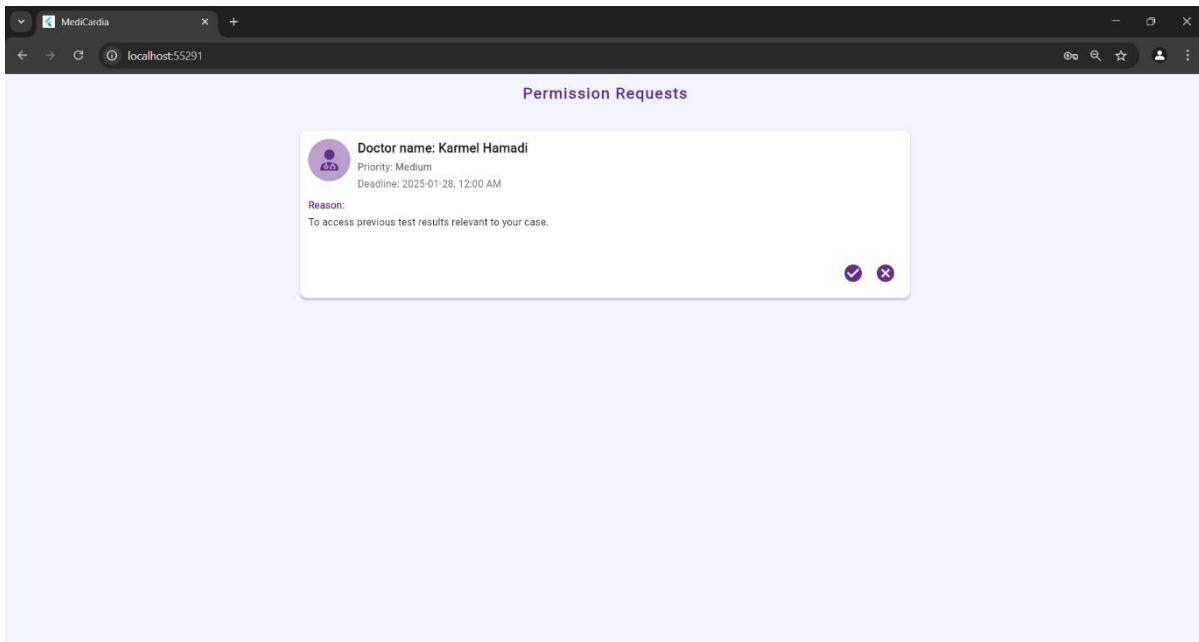


Figure 218: Permission requests screen - web

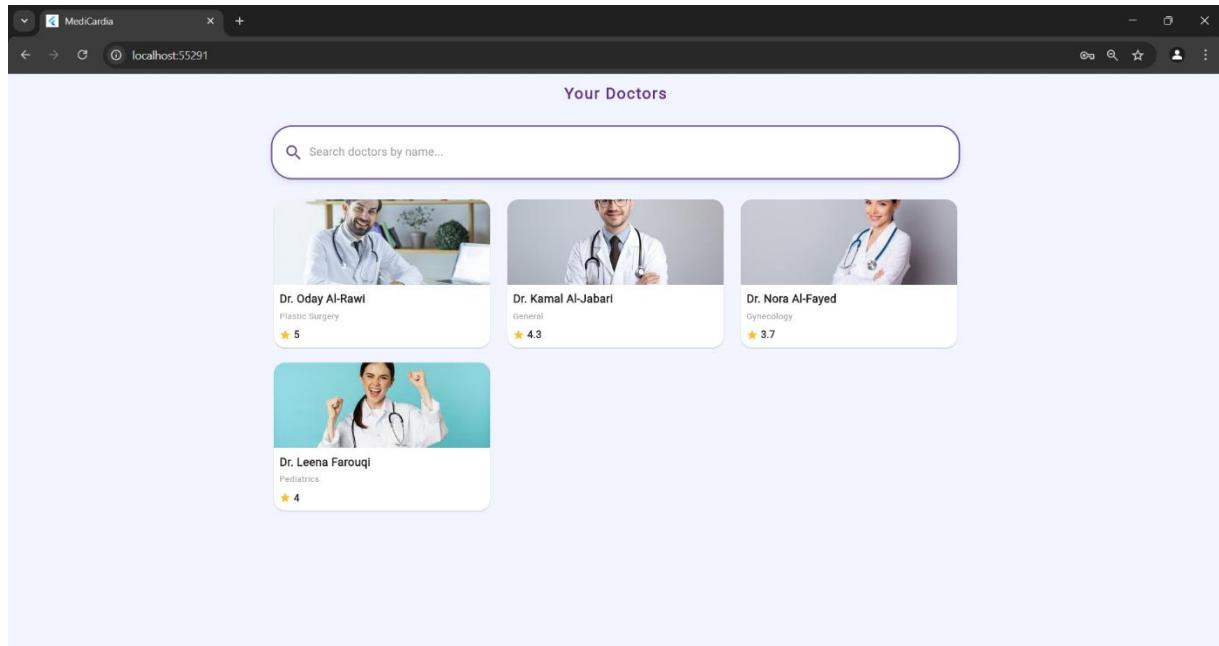


Figure 219: Your Doctors screen - web

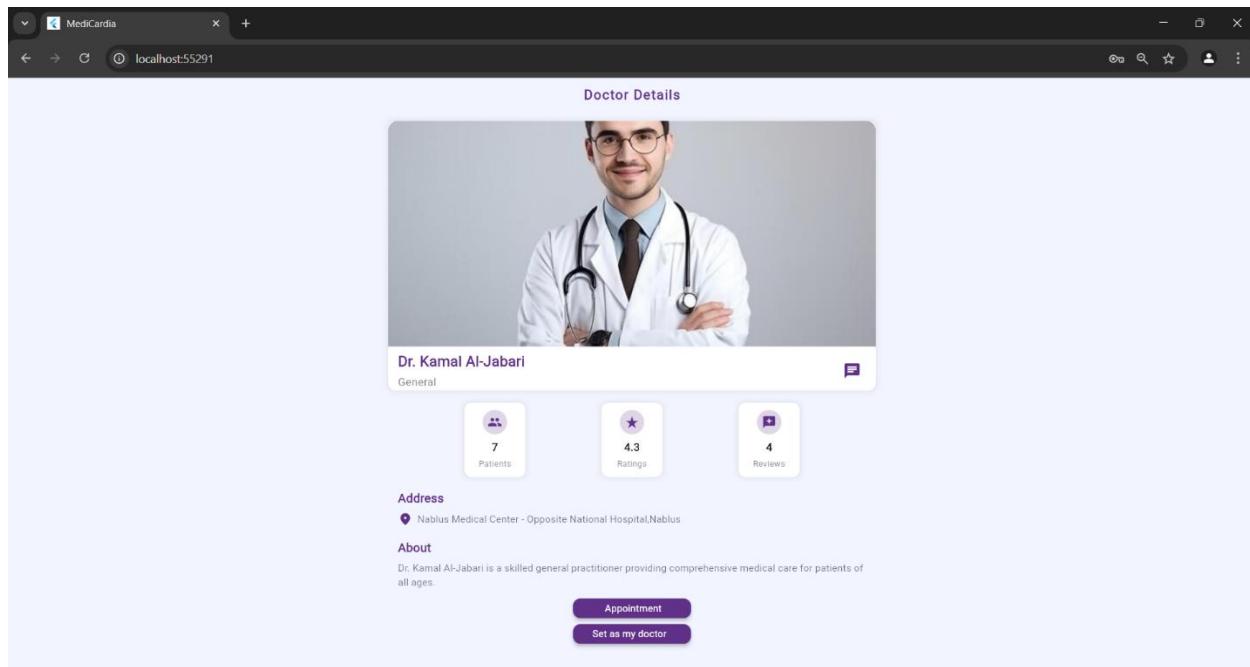


Figure 220: Doctor details screen - web

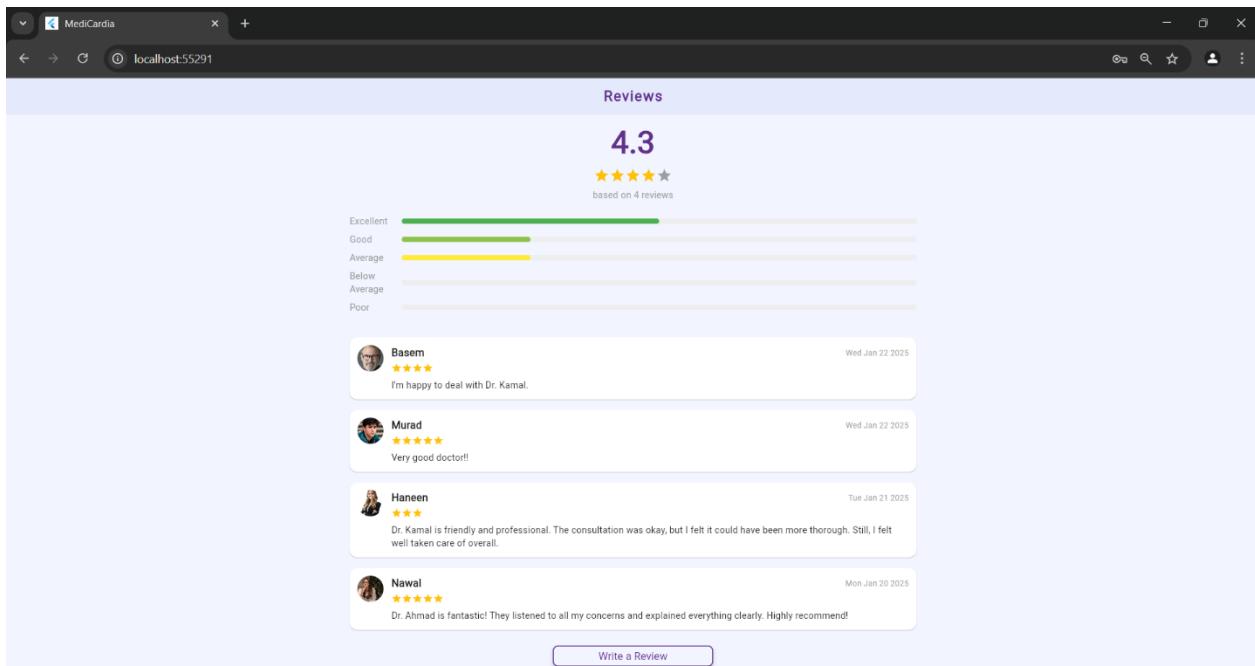


Figure 221: Show doctor reviews - web

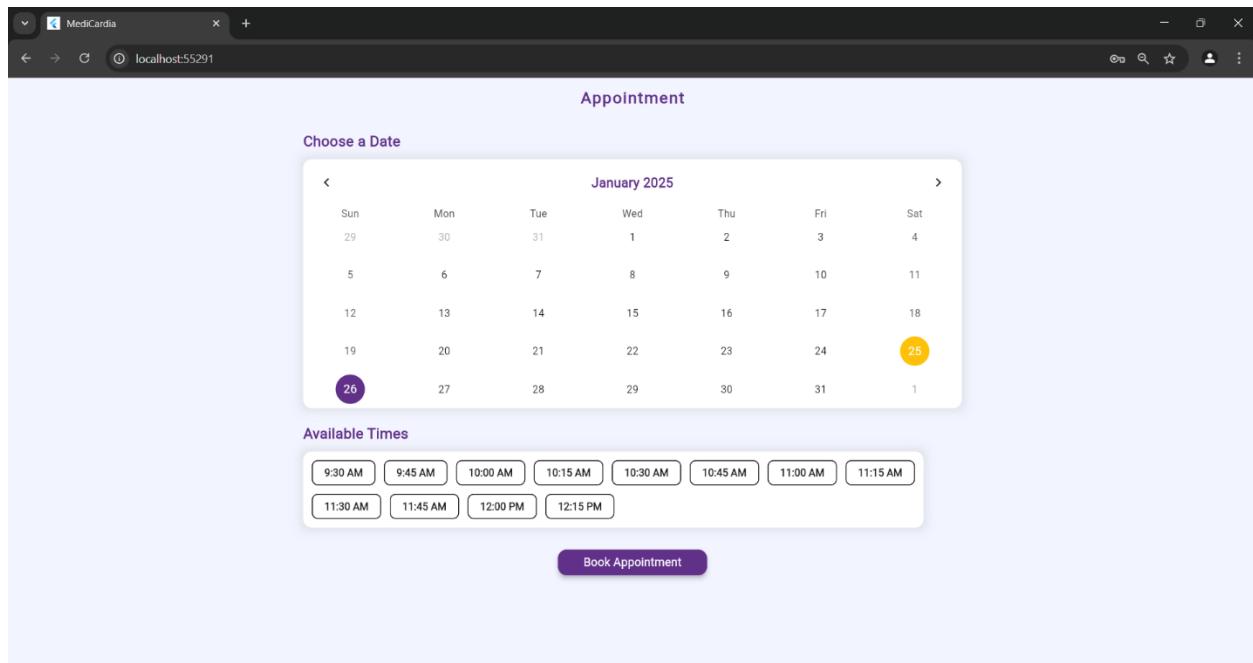
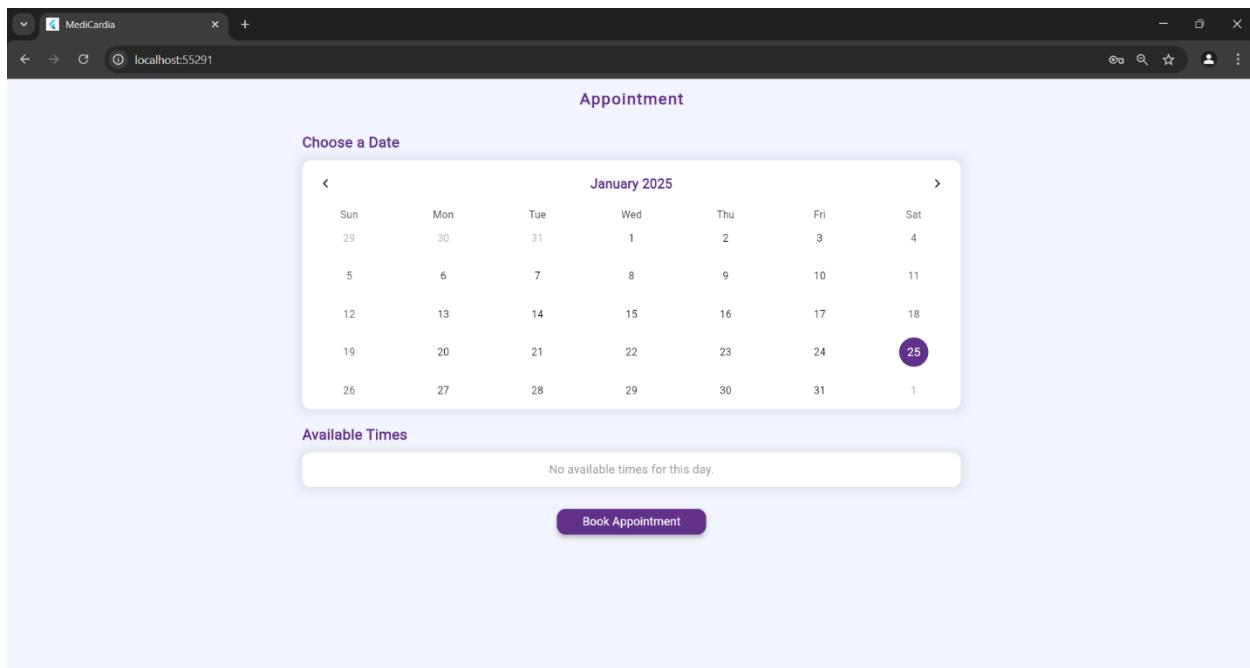


Figure 223: Select date then show available times in this day - web

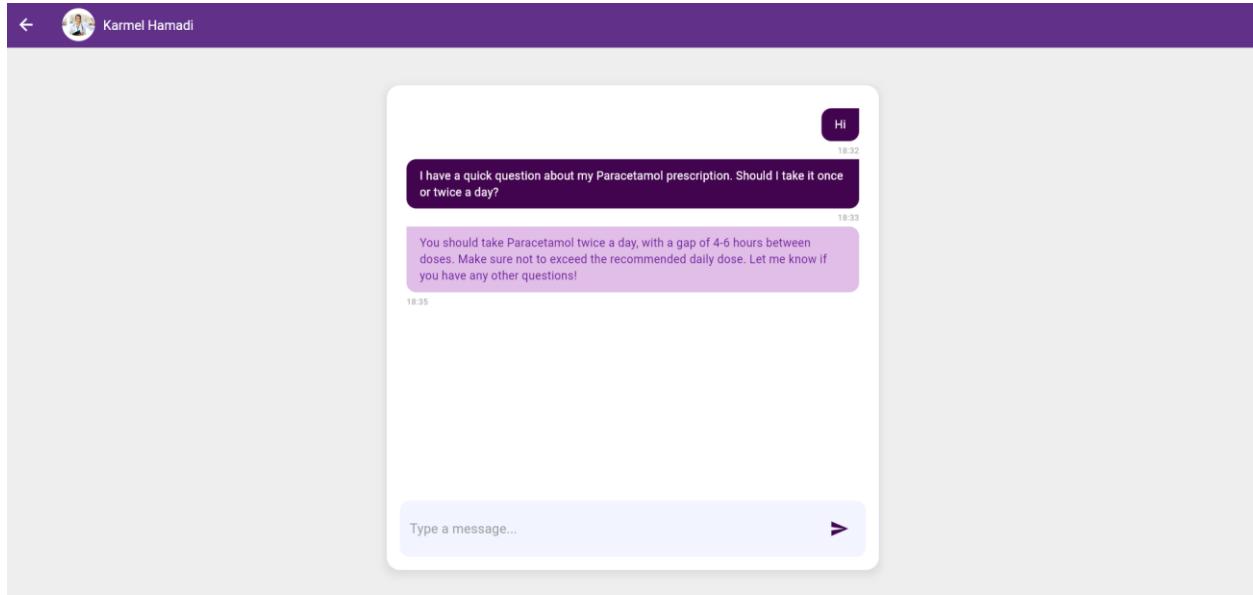


Figure 224: patientToDoctor-chat-Web

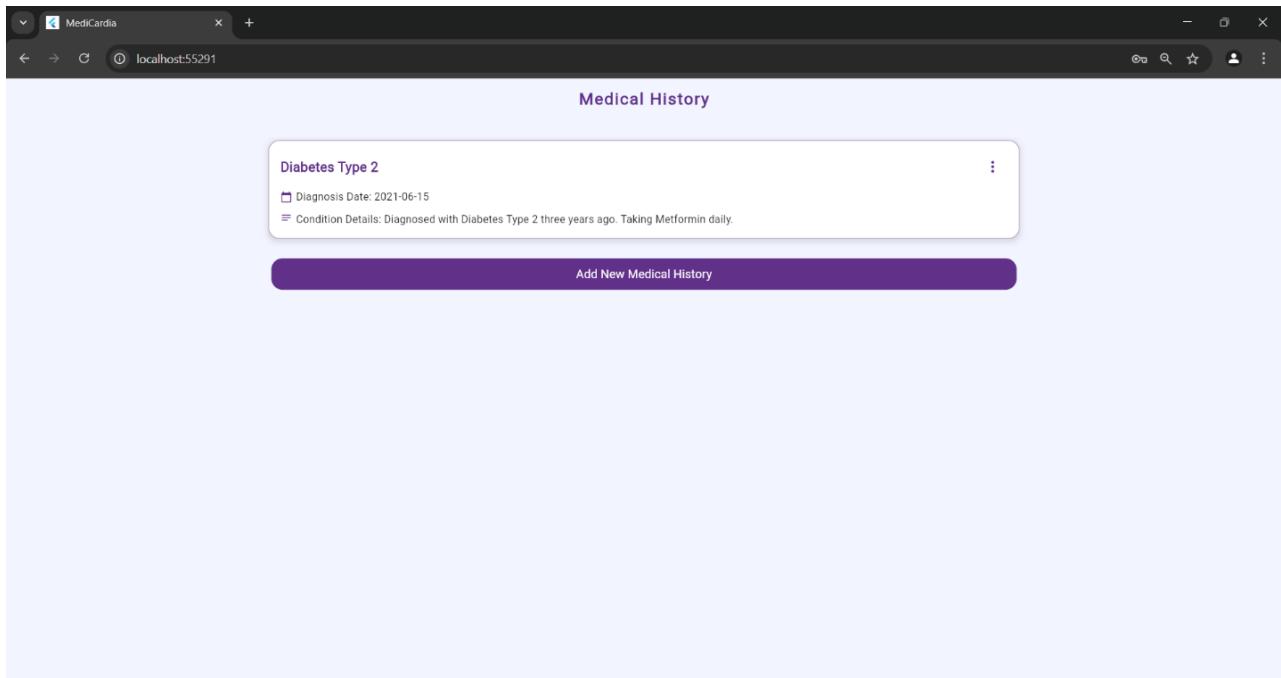


Figure 225: Medical history screen - web

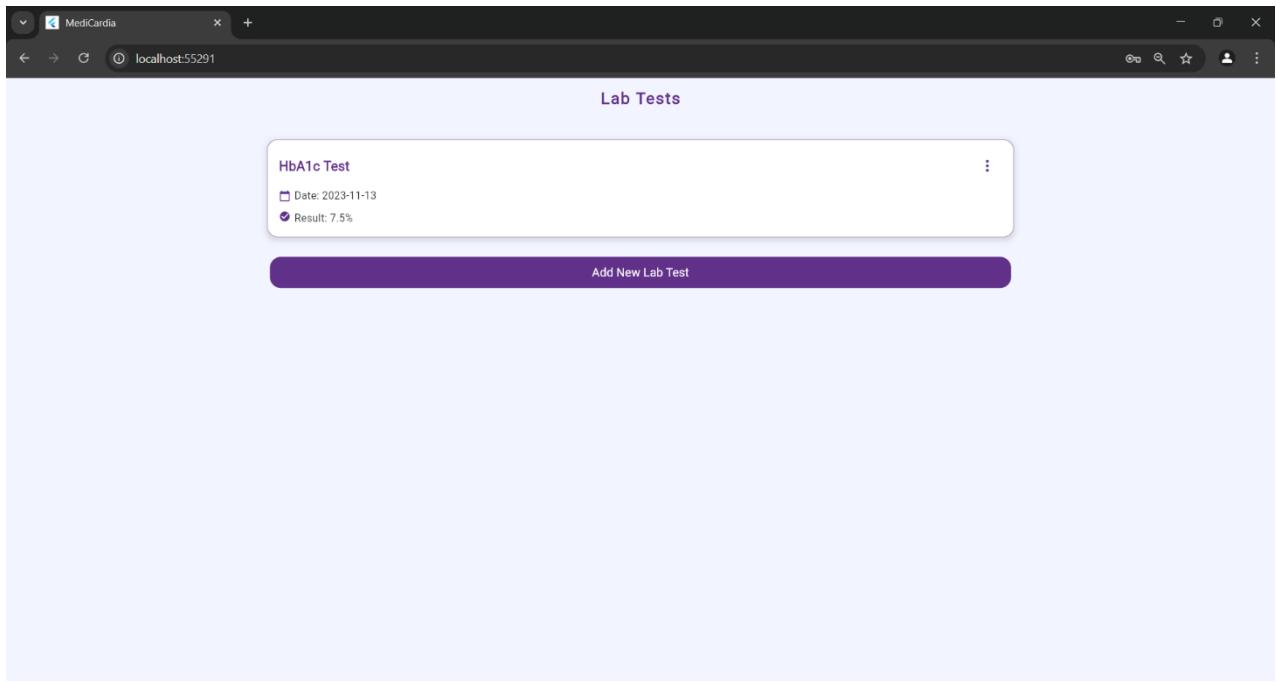


Figure 226: Lab tests screen - web

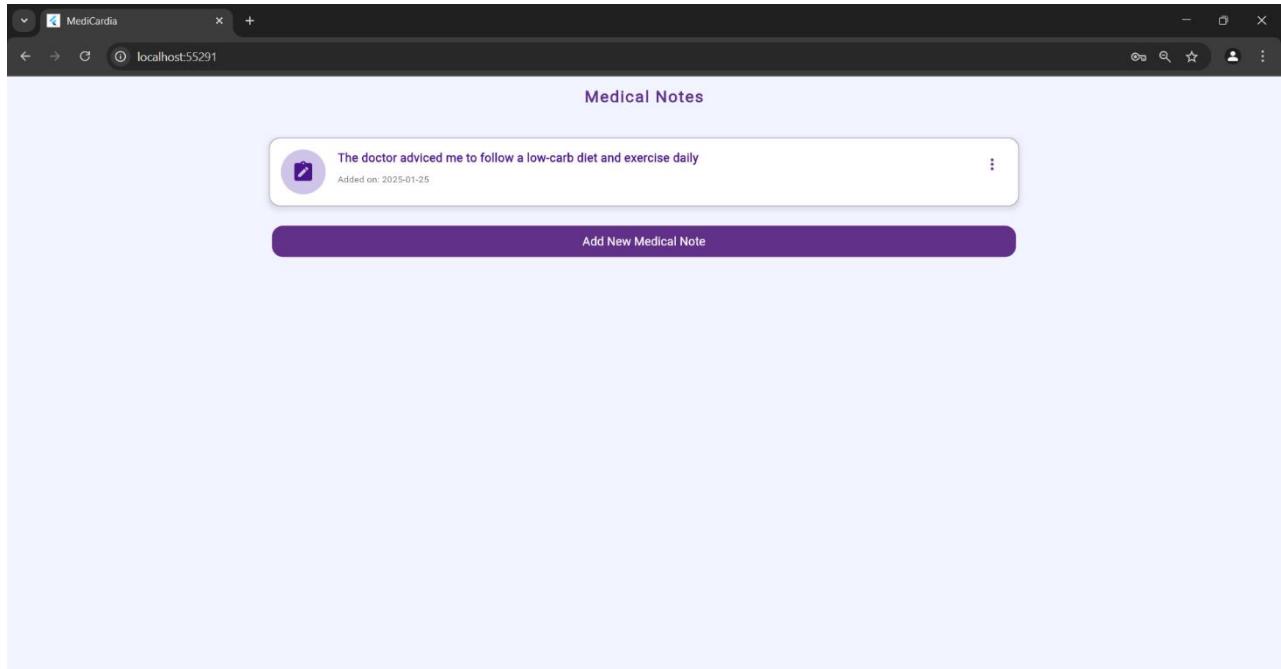


Figure 227: Medical notes screen - web

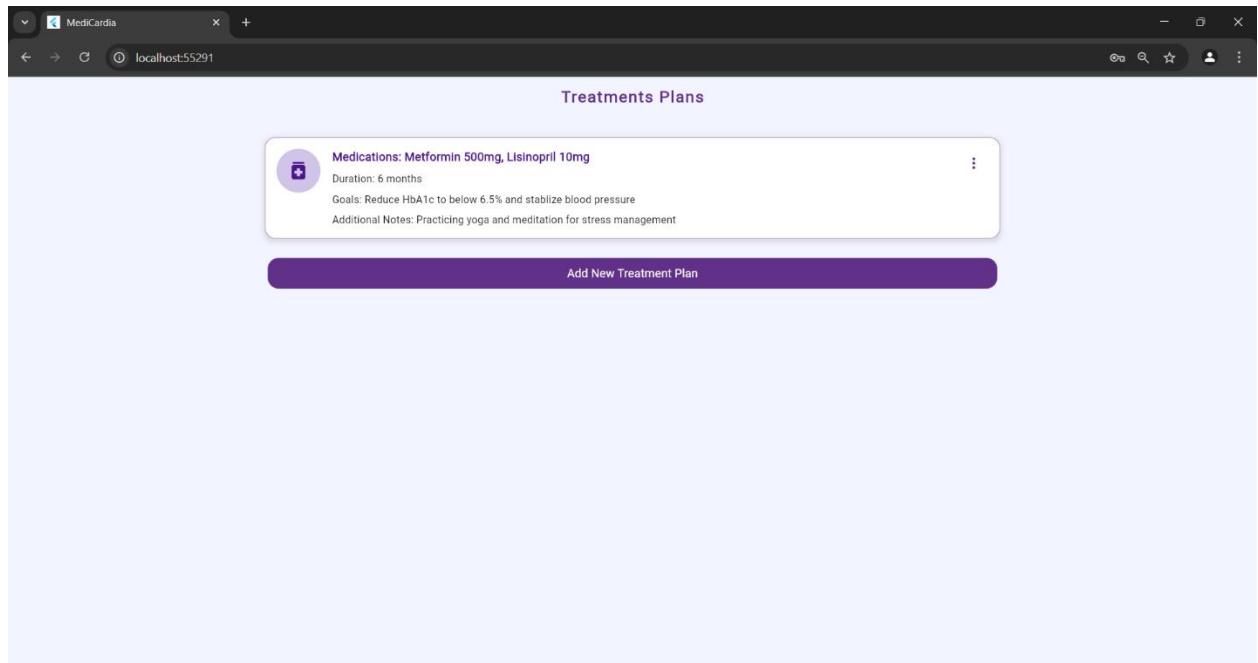


Figure 228: Treatment plans screen - web

The screenshot shows a web browser window titled 'MediCardia' with the URL 'localhost:55291'. The main content area is titled 'My Appointments'.

Under 'Current Appointments', there is a table:

Doctor	Date	Time	Actions
Nora Al-Fayed	27-01-2025	9:30 AM	trash
Leena Farouqi	27-01-2025	12:00 PM	trash
Donia Al-Turk	28-01-2025	9:30 AM	trash
Waleed Al-Jaber	27-01-2025	1:45 PM	trash

Below the table is a section titled 'Appointments Canceled By Doctor'.

For Dr Kamal Al-Jabari (General):

- Date: 26-01-2025
- Time: 12:00 PM

Buttons in this section include 'Choose New Slot' and 'Delete'.

Figure 229: Patient appointments - web

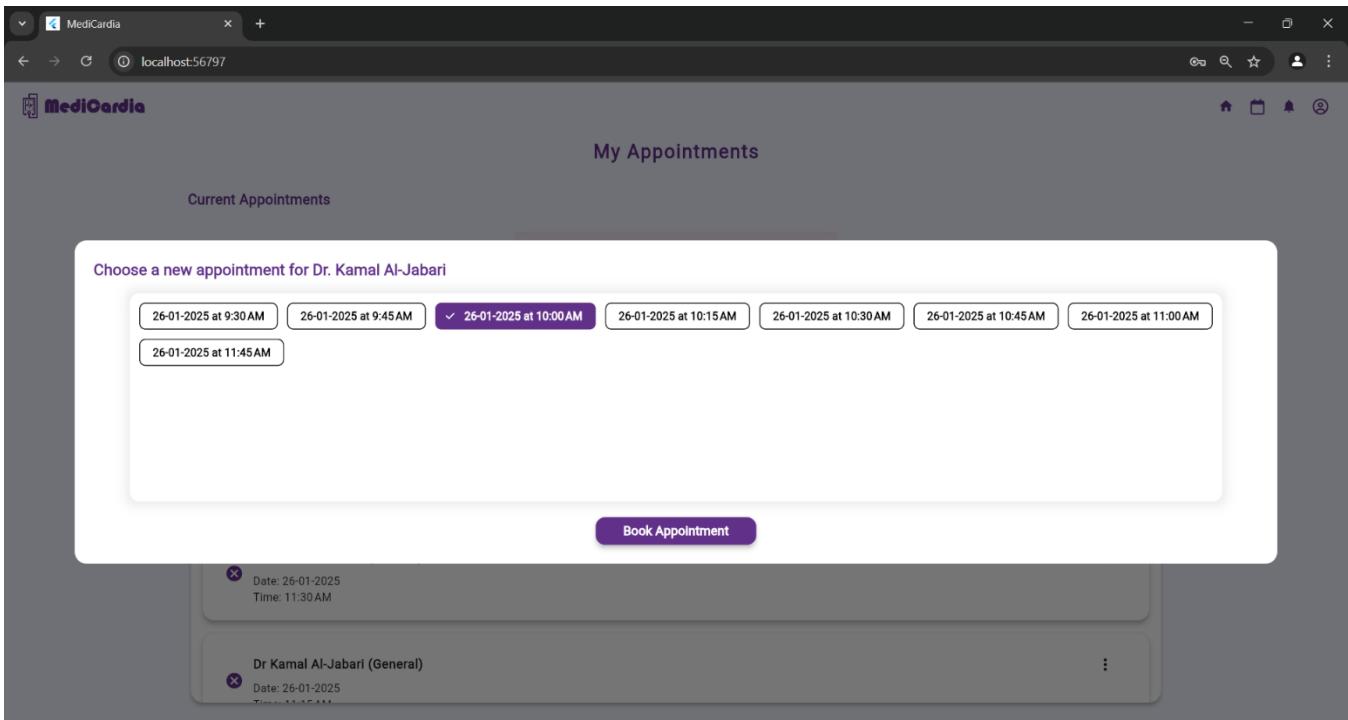


Figure 231: Choose new slot - web

## Doctor home – Web

Welcome to MediCardia

**Dr. Karmel Hamadi**  
Specialist: Cardiology  
**5** Total Patients      **4.5** Average Rating

Search for patient by ID number...

Blood Donation    Set Your Schedule    Reviews

Your patients    All patients

Basem ID Number: 483219768 Location: Nablus	Jalal ID Number: 495217688 Location: Bethlehem	ella ID Number: 533219846 Location: Nablus
Omar		

Figure 232: Doctor home - web

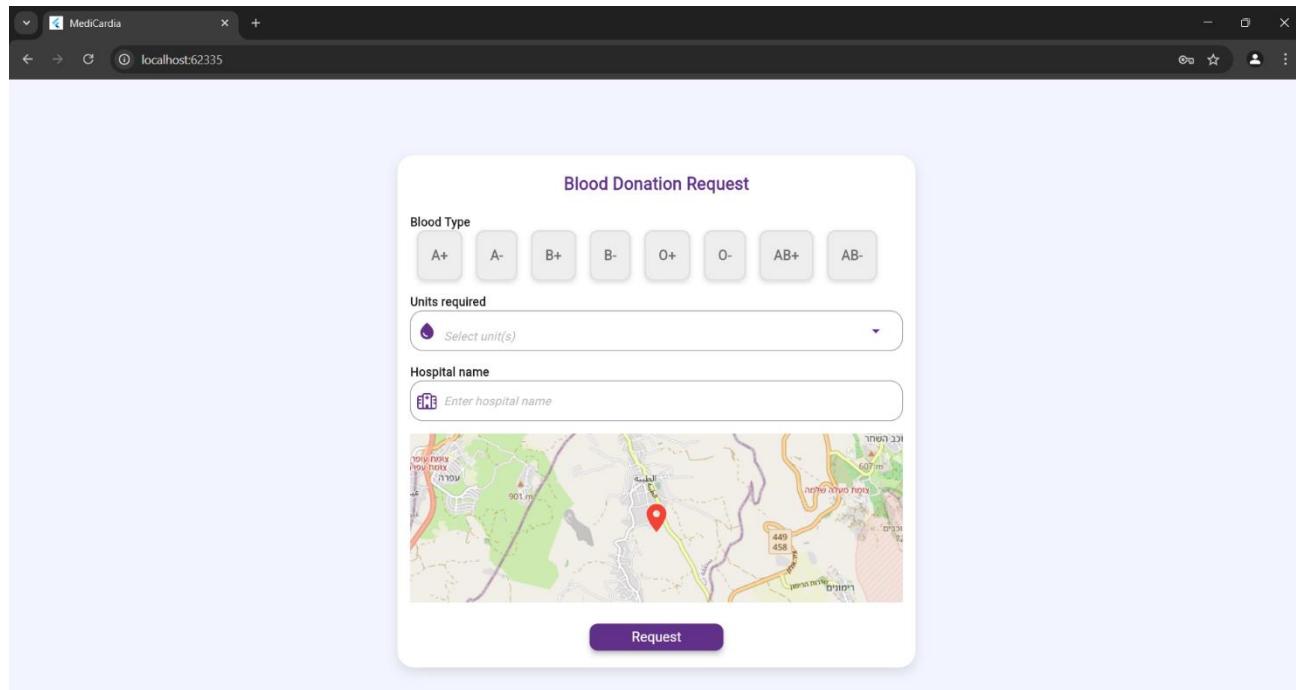


Figure 233: Blood donation request screen - web

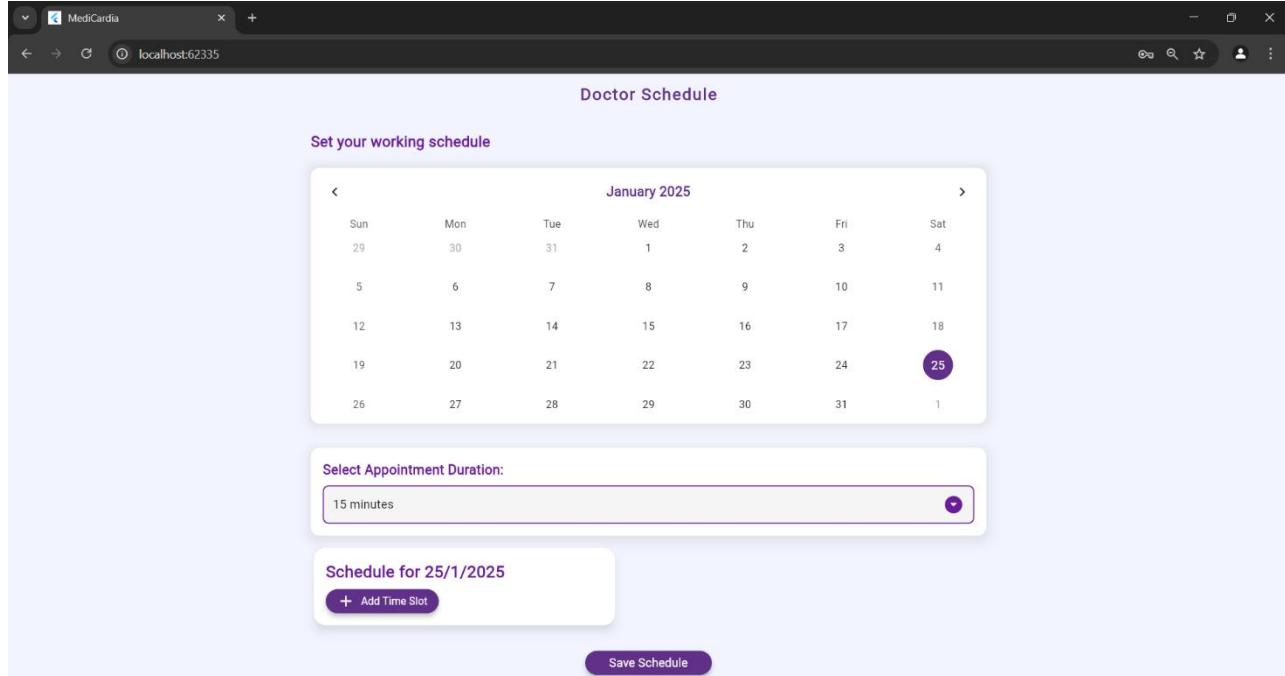


Figure 234: Doctor schedule - web

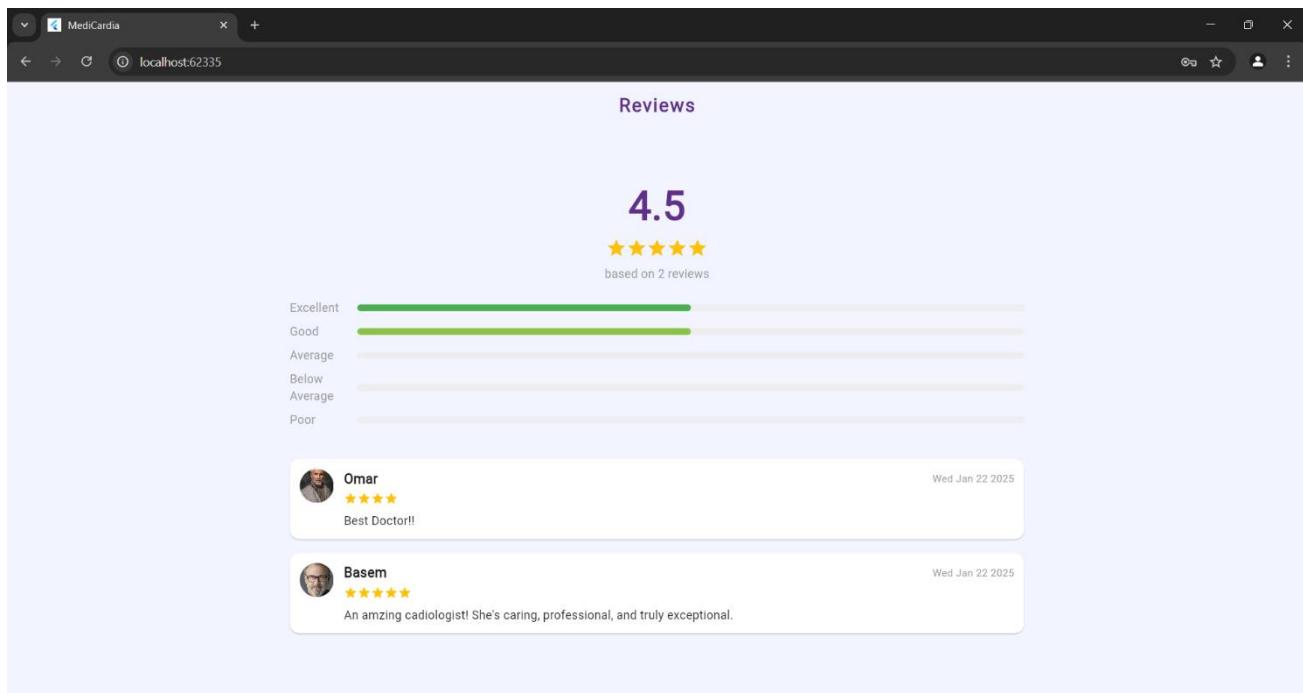


Figure 235: View reviews - web

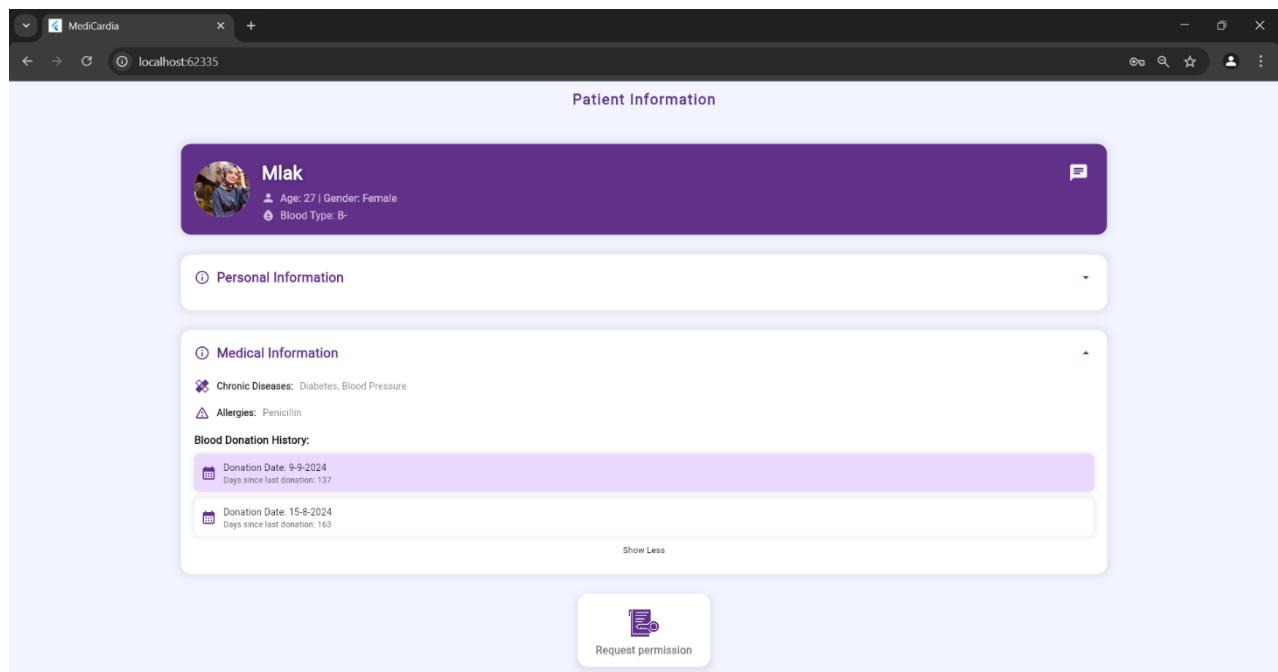


Figure 236: View patient information for doctor - web

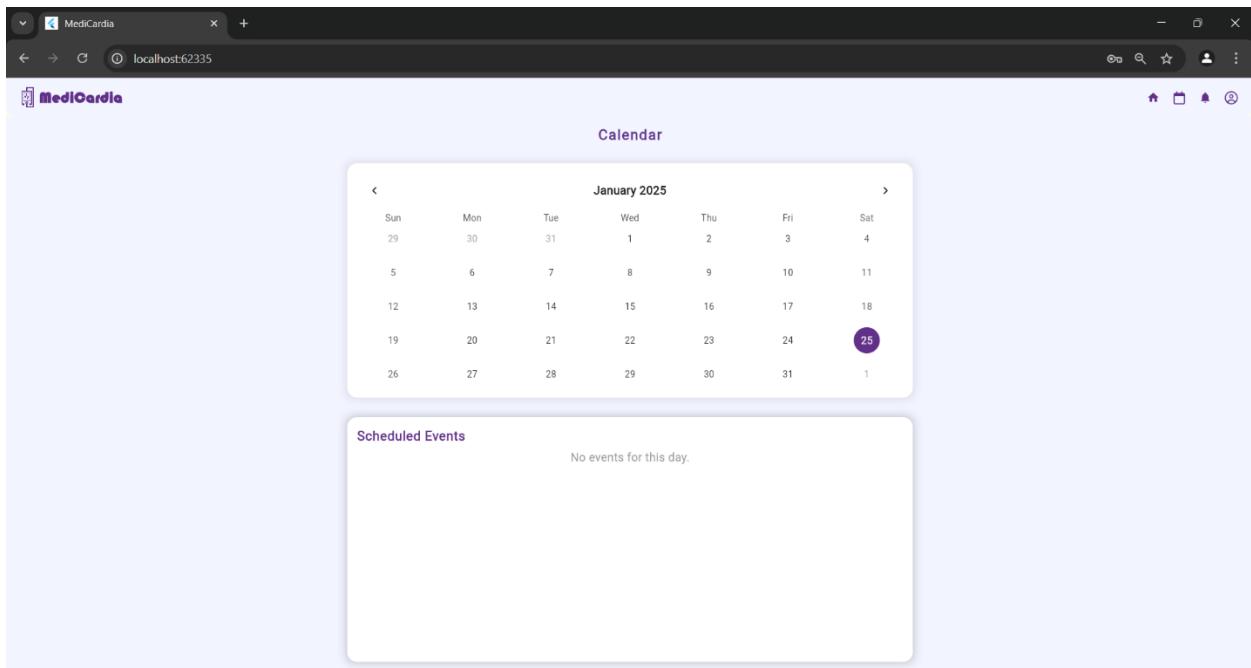


Figure 237: Doctor calendar - web

## Admin-Web:

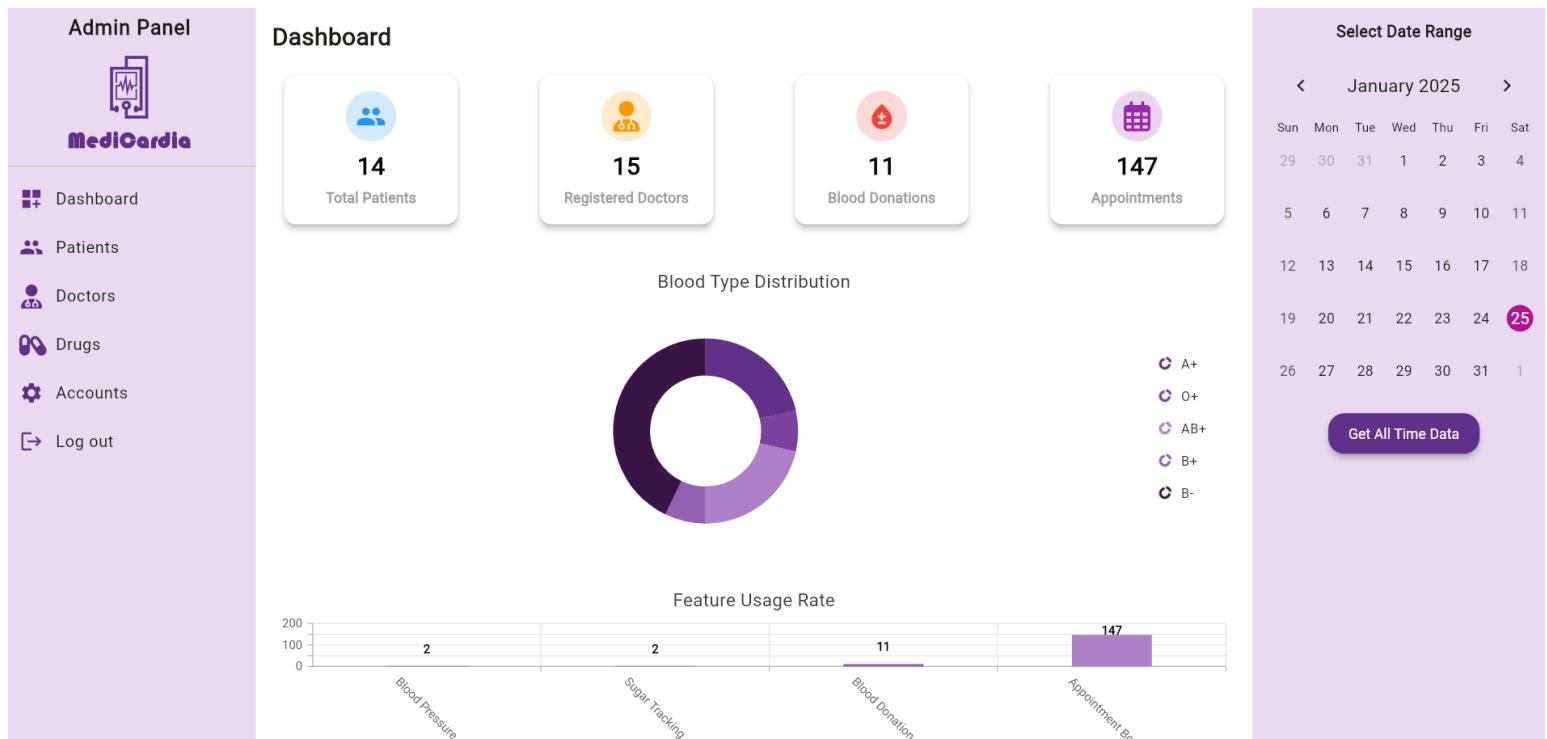


Figure 238: Admin-web

- **Left Panel:**

The admin panel includes the following sections:

- **Dashboard**
- **Patients**
- **Doctors**
- **Drugs**
- **Accounts**

- **Right Panel:**

A calendar is available for selecting a specific time period to view statistics.

- If no specific time period is selected, the admin can click on the **Get All Time Data** button to retrieve data for all time.

**Get All Time Data**

## 1. Dashboard:

This is the statistics for all time.

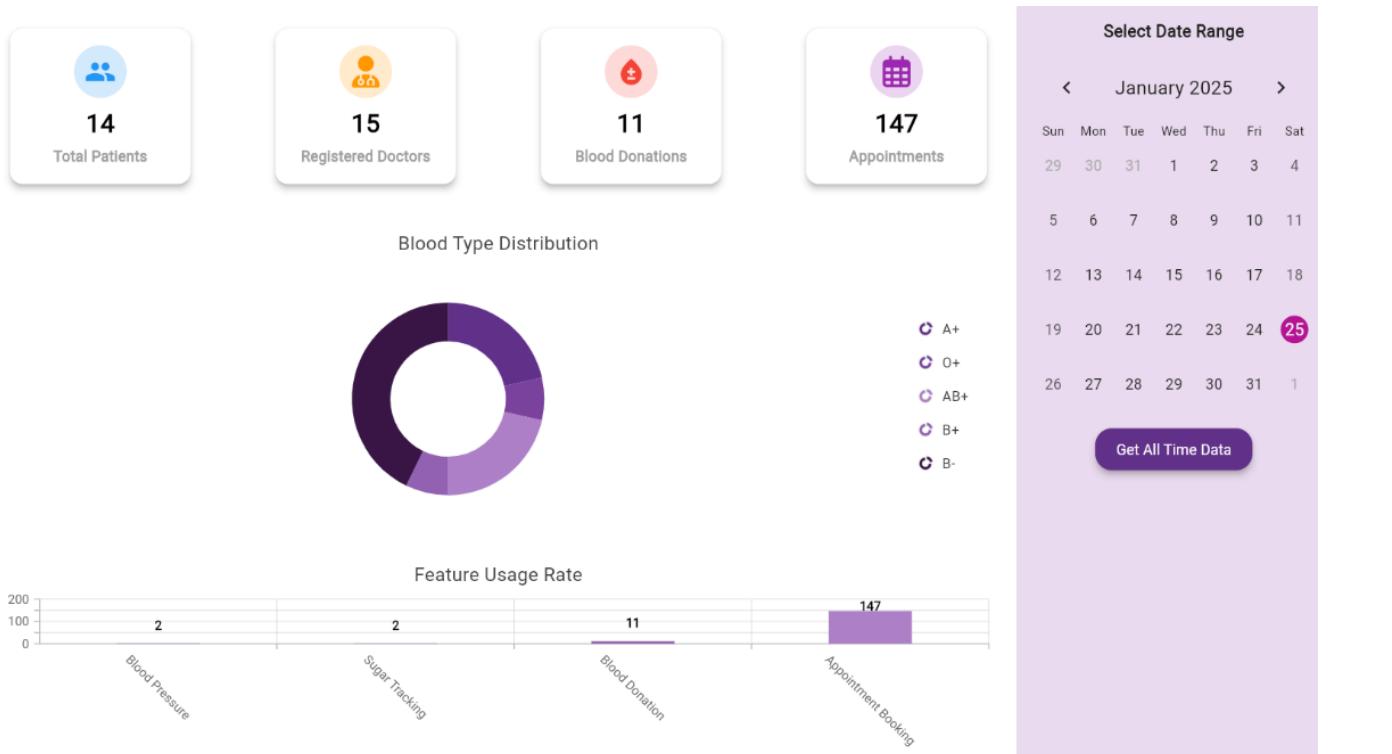


Figure 239:admin-web-dashboard

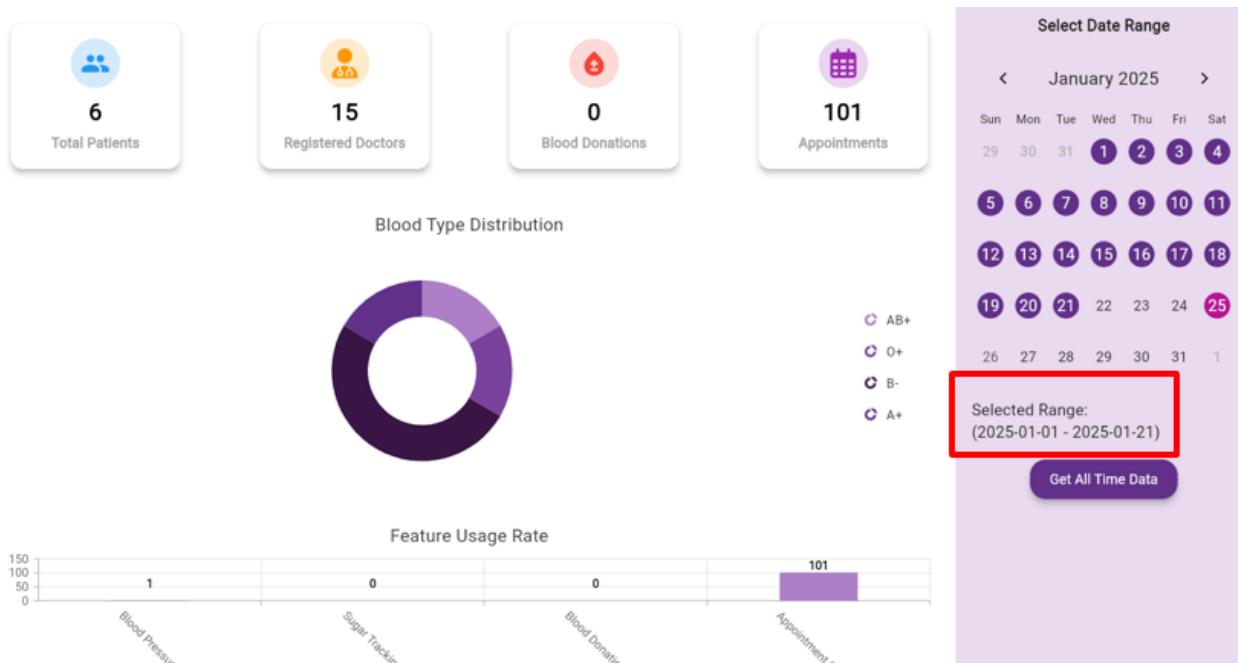


Figure 240: admin-web-dashboard-selectedtime

as follows.

- **New Patients:** 6 new patients registered during this period.
- **New Doctors:** 15 new doctors signed up for the app.
- **Blood Donation Requests:** No blood donation requests were made in this time frame.
- **Booked Appointments:** 101 appointments were booked within this range.

## 2. Patients:

This section provides statistics about patients. You can:

- **View Statistics for All Time**
- **Select a Date Range** to display specific statistics.

The statistics shown in Figures 241 and 242 represent all-time data

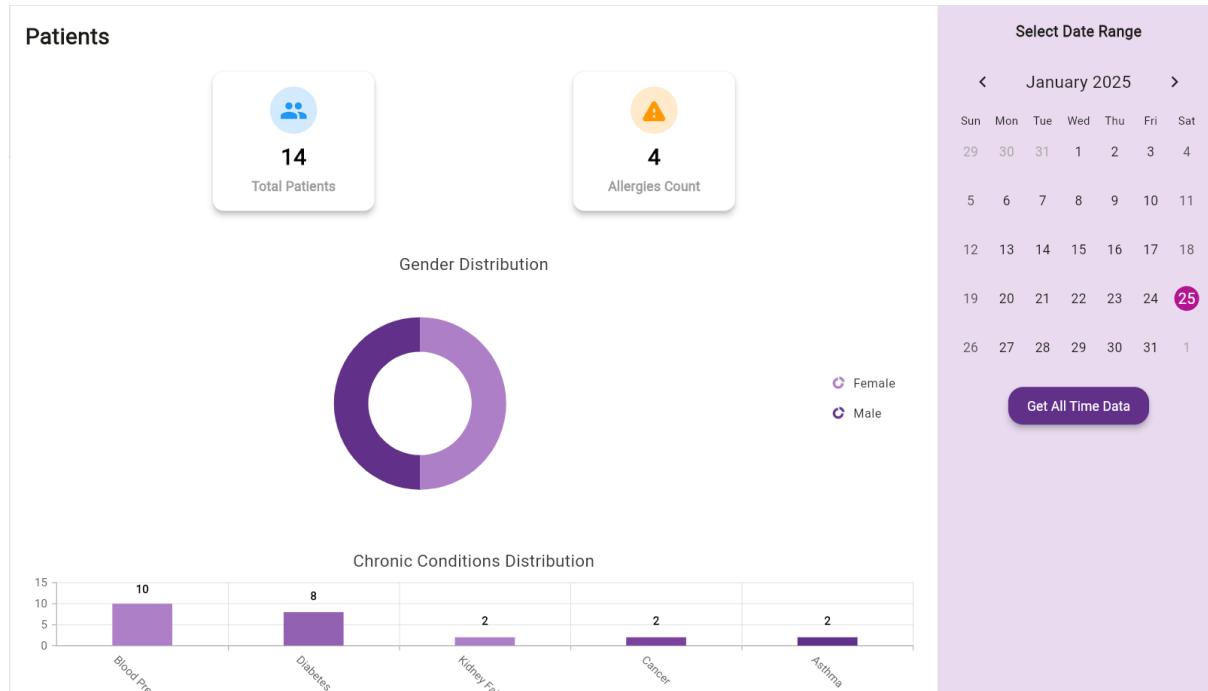


Figure 241:Admin-web-patients1

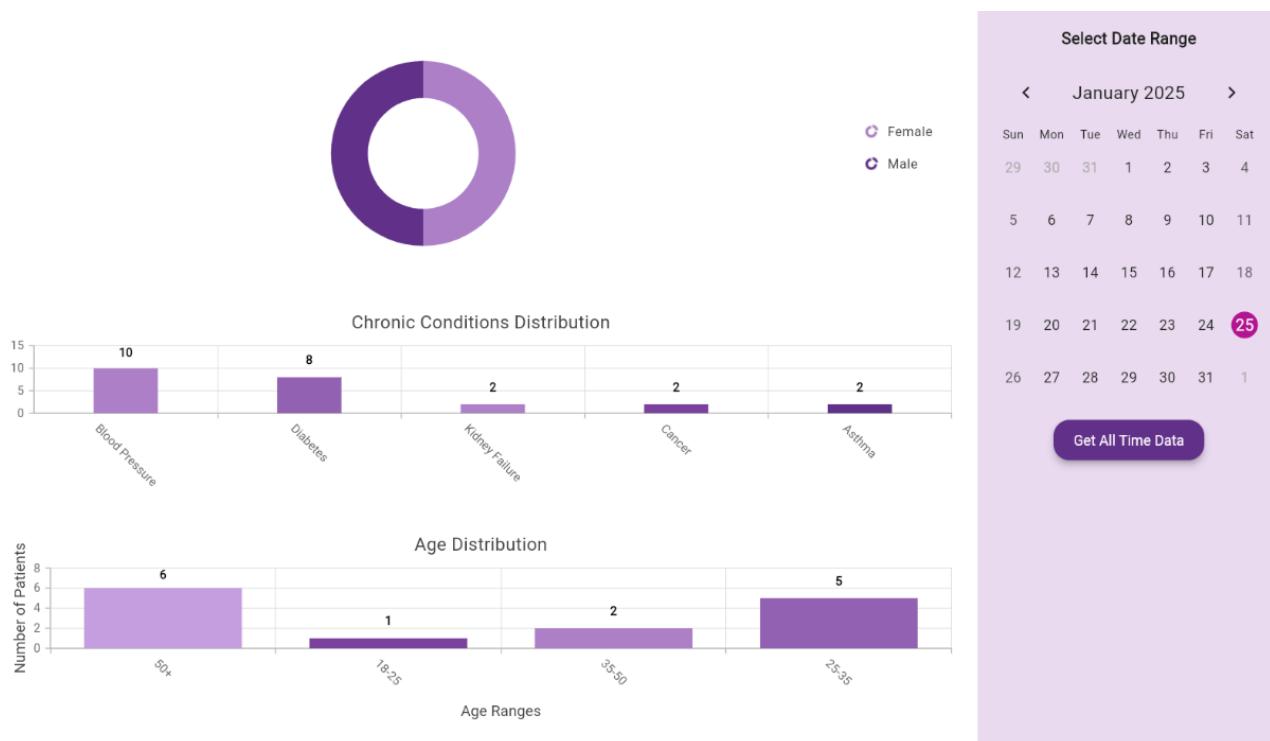


Figure 242:Admin-web-patients2

And this is the statistics for a selected Range (2025-01-09 to 2025-01-21)

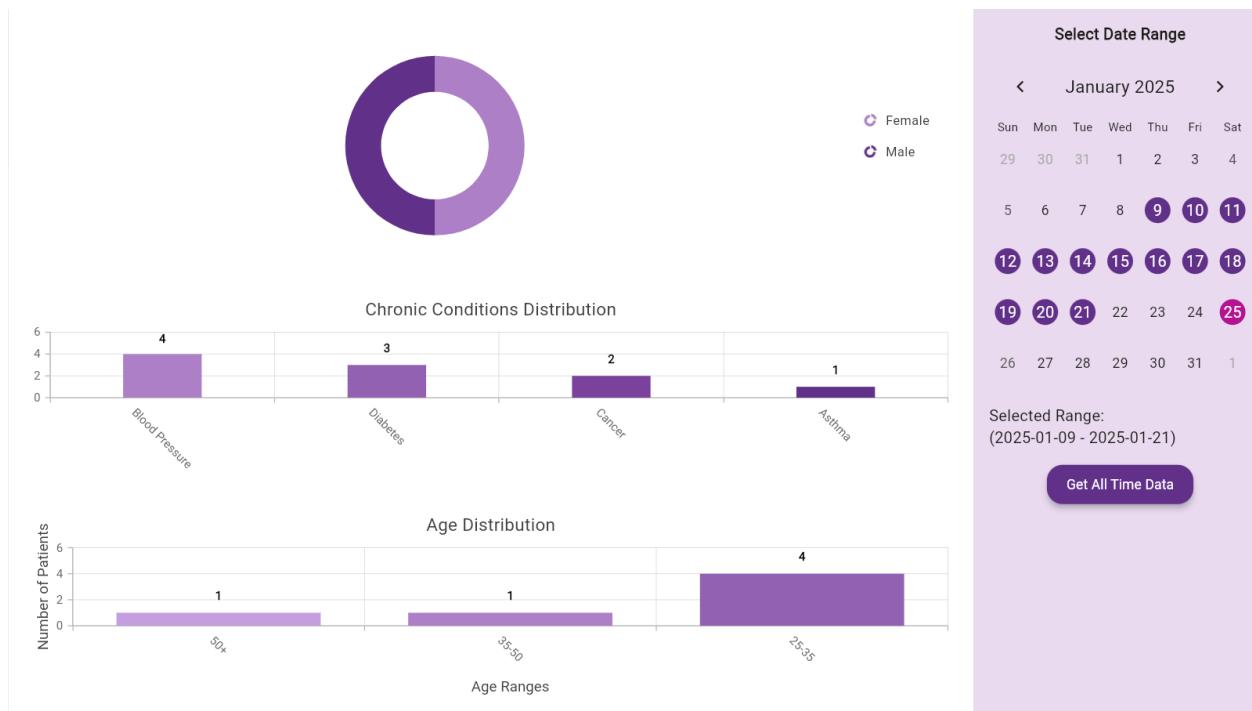


Figure 243:Admin-web-patients-selectedTime

### 3. Doctors:

This section provides Doctors Count by Specialization. You can:

- **View for All Time**

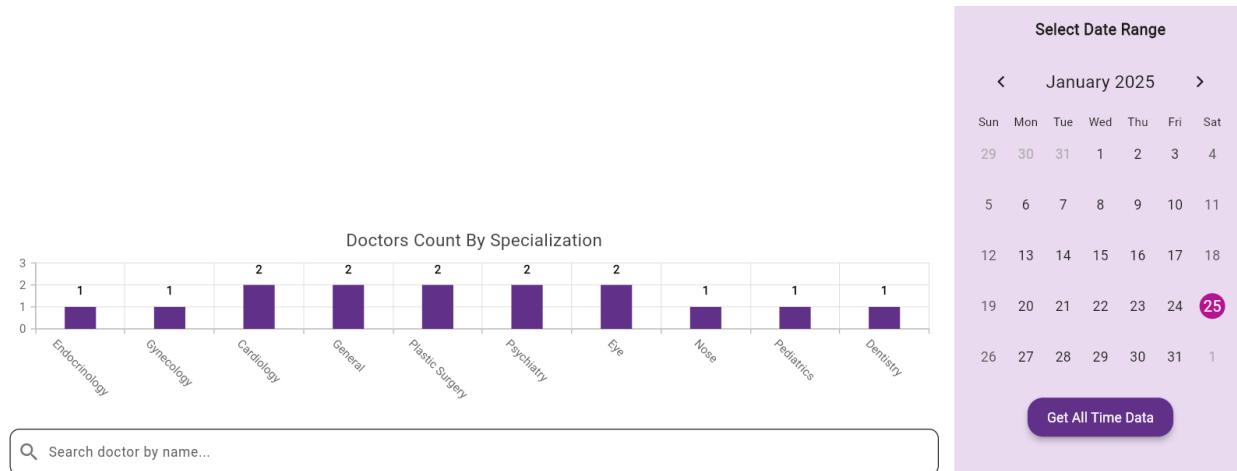


Figure 244:Admin-Doctors-web1

- **Select a Date Range.** (2025-01-01 to 2025-01-19)

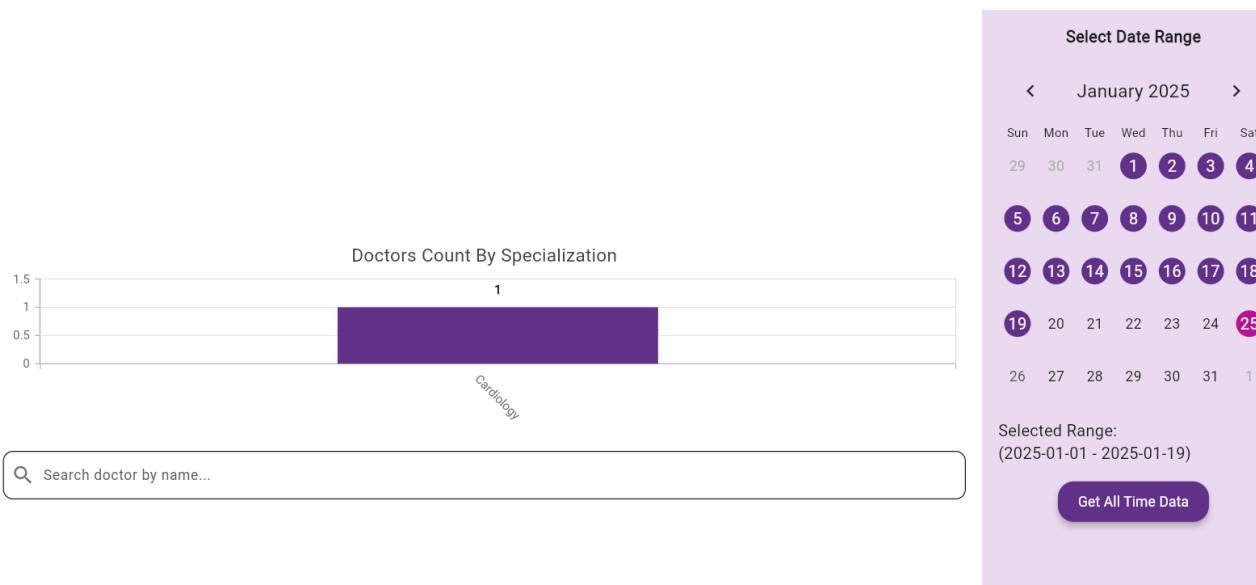


Figure 245:Admin-Doctors-Web2

### Search Section:

A search bar with the placeholder "Search doctor by name..." and a magnifying glass icon. The letter "k" is typed into the search field.

Kamal Al-Jabari

Patients: 7 | Rating: 4.3 | Reviews: 4

Donia Al-Turk

Patients: 5 | Rating: 3.2 | Reviews: 6

Karmel Hamadi

Patients: 6 | Rating: 4.5 | Reviews: 2

Karam Tamimi

Patients: 2 | Rating: 2 | Reviews: 2

Figure 246:Admin-Doctors-web-search

When click on the doctor's name:

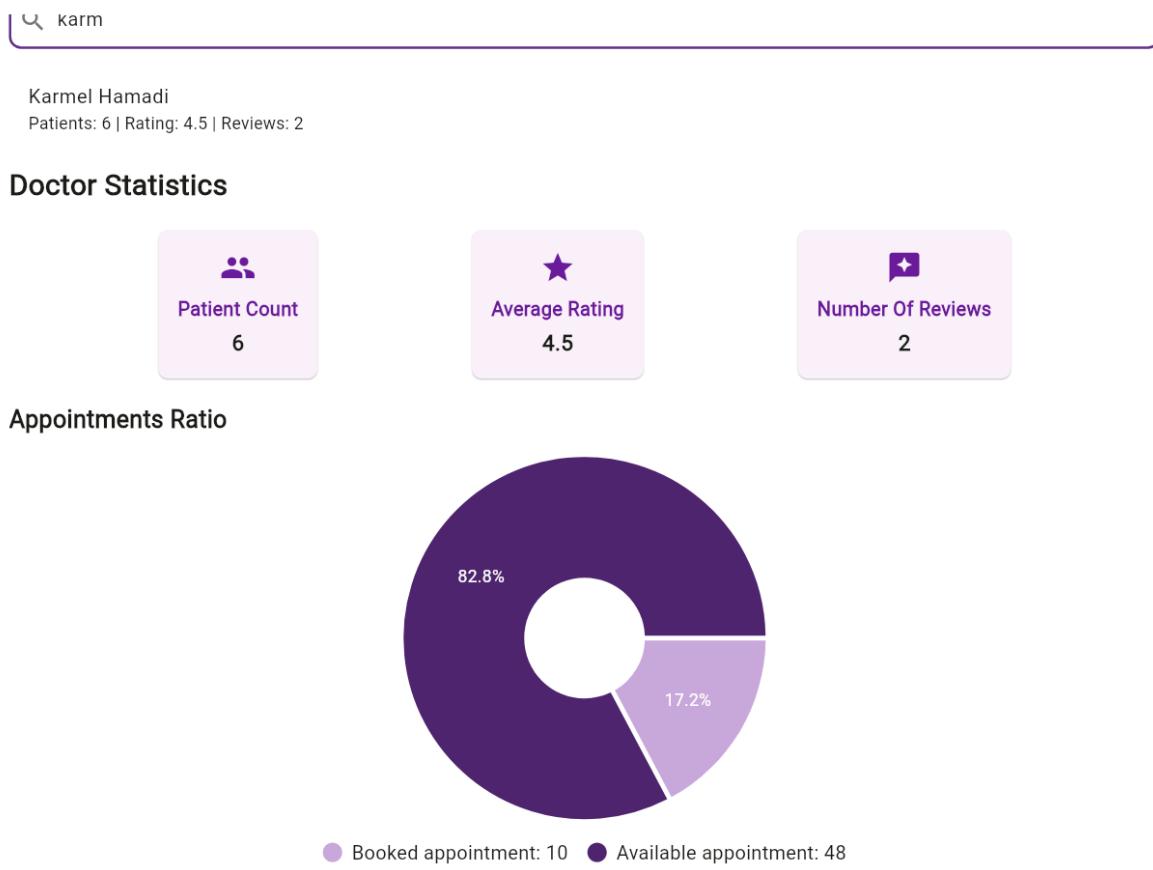


Figure 247: Admin-Doctor-web-selected Doctor

#### 4. Drugs:

To manage drugs, view, edit, delete and add.

The screenshot shows the "Manage Drugs" section of the Admin Panel. It features a sidebar with navigation links for Dashboard, Patients, Doctors, Drugs, Accounts, and Log out. The main area displays a list of drugs with their names, barcodes, and a summary box showing the total number of drugs (35). Each drug entry includes an "Edit" button, a "Delete" button, and a "Details" button.

Drug Name	Barcode
Jordacycline	6251604001120
Panadol	7290008102780
Viraxhc	6251581310277
Tussibal	6251586016044
R12	

Figure 248: Admin-Drugs-web

**Edit Drug**

Drug Name: Jordacycline

Barcode: 6251604001120

Use: Antibiotic for bacterial infections.

Dose: 1 tablet every 12 hours.

Time: With or without food.

Notes: Used to treat respiratory, skin, and urinary tract infections.

Cancel **Save Changes**

Figure 250: Admin-edit-drug-web

**Add New Drug**

Drug Name

Barcode

Use

Dose

Time

Notes

Cancel **Add**

Figure 249: Admin-drug-add-web

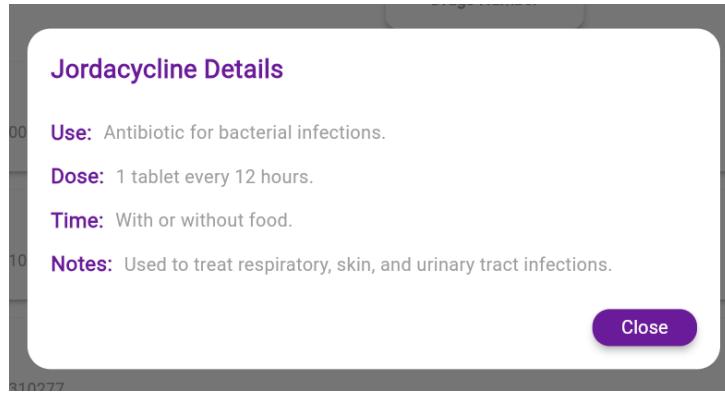


Figure 251: Admin-drug-details-web

## 5. Accounts:

- To manage Accounts, view, edit, delete and add.

**Admin Panel**

**MediCardia**

- Dashboard
- Patients
- Doctors
- Drugs
- Accounts
- Log out

**Manage Accounts**

Name	Email	Phone	Role	Actions
Haneen	haneen@gmail.com	0598237466	Patient	<b>Edit</b> <b>Delete</b> <b>⋮</b>
Mlak	mlak34@gmail.com	0599631722	Patient	<b>Edit</b> <b>Delete</b> <b>⋮</b>
Nawal	nawal@gmail.com	0599327681	Patient	<b>Edit</b> <b>Delete</b> <b>⋮</b>
Jalal	jalal@gmail.com	0599647211	Patient	<b>Edit</b> <b>Delete</b> <b>⋮</b>
Feras	feras@gmail.com	0599634724	Patient	<b>Edit</b> <b>Delete</b> <b>⋮</b>
Basem	basem@gmail.com	0598362711	Patient	<b>Edit</b> <b>Delete</b> <b>⋮</b>
Ameer	ameer@gmail.com	0599643821	Patient	<b>Edit</b> <b>Delete</b> <b>⋮</b>
Murad	murad@gmail.com	0598612244	Patient	<b>Edit</b> <b>Delete</b> <b>⋮</b>
Rawand	rawand@gmail.com	0599614388	Patient	<b>Edit</b> <b>Delete</b> <b>⋮</b>
elia	elia@gmail.com	0594362155	Patient	<b>Edit</b> <b>Delete</b> <b>⋮</b>
Yafa	yafa@gmail.com	0599632481	Patient	<b>Edit</b> <b>Delete</b> <b>⋮</b>
Jenan	jenan@gmail.com	0598621733	Patient	<b>Edit</b> <b>Delete</b> <b>⋮</b>
Omar	omar@gmail.com	0599134677	Patient	<b>Edit</b> <b>Delete</b> <b>⋮</b>

**Add New Account**

Figure 252: Admin-Accounts-web

**Edit Patient Account**

Full Name — Haneen

Email — haneen@gmail.com

Password

Location — Qalqilya

Phone — 0598237466

[Cancel](#) [Save Changes](#)

Figure 253: Admin-Accounts-edit-web

**Add New Account**

Patient

Full Name

Email

Password

Location

[Cancel](#) [Add Account](#)

Figure 254: Admin-Accounts-add-patient-web

**Add New Account**

Doctor

Full Name

Email

Password

Phone

Specialization

License Number

Workplace Name

Workplace Address

[Cancel](#) [Add Account](#)

Figure 255: Admin-Accounts-add-doctor-web

## **5 Discussion**

The main goal of the Medicardia project was to develop a comprehensive health management platform that provides users with tools to monitor chronic diseases, track medical data for easy access by doctors, and facilitate communication between patients and doctors. The application successfully achieved this goal by addressing key challenges in the healthcare system, such as scattered medical data and the lack of effective communication between patients and doctors. Medicardia offers a platform that collects all patient information in one place, dividing it into two categories: public data accessible to all doctors and private data accessible only to doctors with the patient's permission. Additionally, the app allows patients to book appointments with doctors and communicate with them directly via chat. Medicardia also excels in tracking chronic diseases like diabetes and hypertension, giving doctors instant insights into patient health metrics and enabling better management of these conditions. Overall, Medicardia is a significant step in digital health, providing innovative solutions that improve medical data management and enhance communication, ultimately advancing healthcare services comprehensively.

## **6 Result and Conclusion**

In the end, Medicardia was able to provide a complete application where users can manage their health records, track chronic disease, while simultaneously helping improve communication between patients and doctors. Hence, the project achieved its goals by creating an easy-to-use application with the stated features, while having secure data access, appointment booking, and direct doctor to patient chat that improve the healthcare experience.

Through this project, using advanced technologies and solving real-world challenges, valuable experience in developing health solutions was gained, and the ability to work as team and effectively divide the workload was essential to the success of this project.

## **7 Future Works**

The app has great potential for future development, with several improvements aimed at enhancing its effectiveness and better meeting user needs. First, supporting more languages is a key step to make the app available to a wider group of users globally.

Second, since the app deals with two main types of users—doctors and patients—it could add hospitals as a third party in the system. This would allow hospitals to organize blood donation campaigns directly through the app, sending notifications to users whose data matches, such as blood type and the last donation date. Additionally, the app could automatically update patient data by recording their visit to the hospital in their medical records, improving data accuracy and integration.

Third, improving the way medical test results are stored and displayed is important. Results could be categorized and shown based on the type of test (such as blood tests, X-rays, or hormonal tests). This categorization makes it easier for both patients and doctors to access the needed information quickly and provides a more organized and smooth interface.

These future developments aim to improve the user experience, increase the app's effectiveness, and make it a comprehensive tool that supports collaboration between doctors, patients, and hospitals, while offering innovative solutions to meet the needs of all involved parties

## 8 References

Buis, L. R. (2024). *Mobile and tablet apps*. Retrieved from JMIR mHealth and uHealth.

Hamine. (2015, November 2). Impact of mHealth. *Impact of mHealth chronic disease management on treatment adherence and patient outcomes: A systematic review*, p. 15.