An-Najah National University

Faculty of Engineering and Information Technology

Computer Engineering Department

Software Graduation Project

HEALUP

By

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Acknowledgement

In the name of Allah the all-knowing or all powerful, we would like to state that all praises belong to Allah, who provided us with the tenacity, perseverance and wisdom to be able to come out with the objective of this project.

All our prayers to Allah for giving us the strength to face the challenges and tensions and for getting this success also. We pray this success is the beginning of a period in which we serve better, grow more and make more useful contributions for our community and country.

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Abstract

Patients visiting healthcare institutions continue to experience various difficulties, including the inability to secure an appointment with ease and the lack of immediate access to medications. As a remedy, HealUp has been proposed as a solution, both as a modern website as well as a mobile application. This project seeks to improve accessibility to clinics and pharmacies, further enabling them to operate more smoothly, thus resulting in a better experience for patients, indeed, improving the interactions within the healthcare sector.

The project addresses several key issues:

- Appointment Booking: Traditionally, patients were required to go to healthcare institutions to make appointments, an endeavor that typically includes long queues. However, With HealUp, patients have the opportunity to book appointments with their preferred doctors at any time from the comfort of their homes.
- Pharmacy Access: Those patients residing in rural areas often require specific medicines, the procurement of which proves difficult due to their location. Using HealUp, patients can search medicines stocked by pharmacies, place easy orders and even have them delivered to their location.
- Medicine Availability: The platform serves to reduce the burden of searching for specific medicines for the patients, while also seeking to allow patients take advantage of promotional offers from pharmacies, thus saving them money.
- Enhanced Communication: HealUp offers a myriad of benefits including improved collaboration and communication of the doctors working in the center.

The application has friendly interface which provides easy navigation by allowing quick appointment scheduling, smooth medicine buying and numerous other capabilities to be described in the report as well. (HealUp) is intended for patients and physicians in the family settings of medicine with an effective remedy to improve the system.

The results demonstrated that **HealUp** successfully addressed the main issues of appointment scheduling and medication accessibility, making a positive impact on the overall healthcare experience.

1 Introduction

Amidst the continuing issues of accessibility to healthcare and efficiency of healthcare systems, **HealUp** stands out as a unique tool that purports to help patients and healthcare providers connect in a more effective manner. (HealUp) is a mobile app alongside a web-based platform that tries to make it easier for both the providers and patients to access medical services and promote better interactions. In the application **HealUp** users are able to utilize a more advanced technology that allows for more efficient healthcare provision, increased user satisfaction and ease for medical practitioners.

The main aim of the platform is to enable both patients and doctors by integrating all the features into one system.

The app has made it much easier for patients to find out which doctors are available, with additional features such as scheduling appointments and the ability to cancel or change their bookings. Additionally, patients are given a brief explanation of what the app is about during the registration process, eliminating any possibility of hidden fees.

The Heal up extends its coverage on pharmacies allowing patients to buy over the counter medicines and even get information about the available drugs on a single platform. After adding the items to the cart, patients are able to order and have the option to pay by cash or credit card and even check the status of their order via a live map. Furthermore, thinking of the older generation or the physically challenged who may have difficulty writing, a remarkable feature enables patients to take photographs of medication packagings for easier identification.

Furthermore, the platform endorses access to prescriptions and medical reports to secure patients and also enables them to make medicine requests based on their doctors' prescriptions. Real time chat function empowers patients to talk to their doctors directly in a more useful way and this encourages patients in taking joint responsibility for their health care.

The app also supports ChatBot feature that allows patients to express their signs and symptoms and then suggests the best possible specialist and possible diagnosis who might be able to help them.

On the side of the doctors, Heal Up allows them to receive, approve or decline appointment requests, make bookings, as well as record the history of interactions with the patients. Also, during a visit, a healthcare professional can issue an assortment of diagnostic reports, medications, and other practitioners and patients interactions resulting in better and holistic health services delivery.

HealUp is removing some of the biggest barriers that technology has in healthcarejustice in accessability, access to care, access through different channels in the ecosystem. The platform is built with easy design, which allows the patients and doctors to meet and helps to work in the best way possible, so this will immediately improve the quality of healthcare services. This report will focus on the design, development, and functionality of **HealUp**, highlighting its potential to transform the interaction between patients and doctors.

2 Theoretical Background and Previous Work

2.1 Limitations & Constraints

2.1.1 Limited Time and Resources

Time limitation was a major obstacle to develop the system. The concepts we are implementing in HealUp were so diverse and it needed chatbot, real-time ordering, appointment scheduling etc module integration in single system which all together demanded a lot of time to plan and implement properly. We had to much care about developing only rich functionality rather than focusing on advanced feature implementation. As we had larger time constraint when compared with nice-to-have features in mind therefore in finalization part, so only basic feature functionalities.

2.1.2 Technical and Integration Challenges

Integrating features like real-time order tracking with APIs like Google Maps had its own set of technical challenges mainly because of compatibility issues and performance optimization. We also had to make sure that the data is in sync across clinics, pharmacies and application in real-time without any discrepancies.

2.1.3 Regulatory and Security Constraints

Compliance with healthcare data regulations, including privacy regulations, necessitated secure handling of data such as end-to-end encryption of sensitive information, while not hampering the user experience for the health management.

2.1.4 Payment and Local Regulations

The lack of a globally accessible payment platform in the Palestinian region caused difficulties to begin with in implementing the credit card payment. Moreover, following local regulations related to the OTC sale of medications without prescription posed significant need for compliance and system design alignment with the laws and regulations.

2.1.5 Performance Optimization

It was necessary to make sure that the application and website was loaded fast while incorporating all this complex functionality, like chatbot-based symptom analysis, real time tracking of shipped reports and secure payment gateway etc. Performance being one of the constraints demanded rigorous testing and optimization to provide seamless experience.

2.2 Earlier Coursework

Previous coursework in mobile application development equipped us with the necessary skills to design and implement HealUp. Knowledge of frameworks like Flutter allowed us to create a responsive, cross-platform application that can work on both Android and iOS devices. Moreover, the knowledge of UI/UX design principles played a leading role in developing the interface in a non-fussy, user-friendly manner and thus made sure that the elderly and not technology-savvy users could also benefit from the website. These three foundational skills thus helped us provide a seamless user experience and integrate many complex functionalities in an effective manner.

3 Literature Review

Literature Study Integration of advanced technology into health care has been the greatest recent innovation and has been aimed at closing the gaps in accessibility and efficiency. This review intends to outline three technological advances in relation to Healup: Artificial Intelligence (AI) powered applications in health care, telemedicine platforms, and integrated pharmacy services.

3.1 Digital Health Solutions for Patient-Centered Care

Patient-centered digital health tools aim at improving the overall healthcare system by enhancing communication, adequate service delivery processes, and accessibility to healthcare services. These systems usually have features like symptom checkers, medication reminder services, and personal electronic health record access. Bujnowska-Fedak's (2019) analysis demonstrates how technology enables patients to take greater control over their health care choices. HealUp does precisely this by facilitating appointment booking, issuing prescriptions, and allowing patients to contact their healthcare providers directly which ultimately leads to heightened patient experience.

3.2 Telemedicine and Patient Engagement

The use of telemedicine is perhaps the most progressive step in bringing healthcare to the farthest reaches of the country. For instance, it has been shown that companies like Teladoc Health and Amwell through virtual consultations have been able to cut down on patient waiting time and increased patient satisfaction (Smith et al, 2021). HealUp builds on those principles by availing of modern technologies, including real time patient-doctor chat, appointment scheduling, and medical report viewing which enhances communication and facilitates collaborative caring.

3.3 Integrated Community Pharmacy Services

Digital pharmacy services are widely adopted as they make the access to the medicines easy and improve adherence to treatment regimens. Among others, live tracking and user-friendly interfaces may be the most critical factors affecting the success of applications as in the works of Shah et al. (2020).

4 Methodology

4.1 Development Tools and Technologies

4.1.1 Tools

In order to complete this project in the best way, we used a set of tools that helped us complete this project in the correct way.

- Visual Studio Code: We use it as our primary integrated development environment (IDE) for programming, editing, and debugging purposes, for both back-end code.
- Firebase: It was capable of constructing notifications and messages, and Brought in real time notification so users were kept in the loop and received crucial news It was utilized for storing images efficiently, enabling users to upload and retrieve images seamlessly.
- Postman: It was used as an API interface that makes sending and handling http requests easier. It was very helpful in creating functionalities as well as efficiently testing these changes in an organized way.
- Android Studio: Used for front-end development, Used as an emulator to test both web mobile application on various virtual devices, ensuring compatibility and smooth functionality.
- GitHub: To facilitate code sharing, saving, collaboration and version control, allowing organized work and effective tracking of code modifications.
- Google Maps: This was incorporated into the app to help the patient to spot the delivery location of the order and within the app to assist order tracking and delivery.
- MongoDB: used it as the primary database to store and manage application data.

4.1.2 Programming Languages and Frameworks

For frontend development

- The platform that we chose for the development of HealUp is Flutter, mainly because of the fact that it is a cross platform app and provides an opportunity to develop for mobile IOS and Android, as well as for web and desktop applications using one template code.
- Dart the programming language. This app uses Flutter, which in turn uses the Dart programming language devised by Google. This language is appropriate for creating mobile as well as web applications due to its power, its object orient principles, and asynchronous programming features.

For backend development

- Node.js with Express.js The benefit of using node.js, its seen to have many advantages and ease to work with means, coupled with the many benefits of using Express.js, all combined together, means they were the ideal choice to work on the backend for this project . Such a foundation of technologies ensures clean & efficient code which at the same time makes the entire experience seamless across platforms and devices allowing us to cater to the various needs that our users might have.
- Express.js Framework: is a web application framework that runs on top of Node.js. it streamlines web application development by allowing developers to build web applications and powerful APIs enhancing the HTTP request and response system, providing effective routing for the application endpoint and middleware for added functionality.

4.1.3 Database Design and Management

Choosing the NoSQL database (Mongo Database) 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, given that our application requires updates to

keep pace with the tremendous development in technology and corporate policies in the world. 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 excel- lent performance at the same time. We utilized Firebase effectively for storing notifications, messages for patients and doctors and It was utilized for storing images .

4.1.4 Database Design and implementation

Database Tables

- **Doctor table**: Holds comprehensive details about doctors Id , username , password , phone , email , address , hospital , photo , time of availability , duration, price per doctor duration session, including specialization, years of experience, and patient ratings. It incorporates a pre-save middleware to securely hash passwords.

- **Patient table:** Keeps patient profiles(id , username , password, date of birth , gender , phone , address, email), and medical histories, and verification details, forming the backbone of patient management. It incorporates a pre-save middleware to securely hash passwords.

- **Management table:** Stores user data for administrative tasks(id , gender , phone, address , email , password), including hashed passwords for secure access.

- **Appointment table**: The Appointment schema organizes and manages schedules between doctors and patients. Key fields include patient_id, doctor_id, app_date, and status (completed, confirmed, canceled and pending). A unique constraint ensures no overlapping appointments for the same doctor at a specific time.

- **Medication table**: organize the details of medications in stock (medication id, medication name , scientific name , stock quantity of medication , expiration date , description of each medication , type of medication, dosage, price, image of medication, discount percentage), with dynamic calculations for discounts based on medication offers.

- **OTC Medication table**: Focuses on over-the-counter medication categorization by type, ensuring efficient inventory management.

- **Prescription table**: Links prescribed medications to doctors, patients, and their respective appointments and the prescription text including the list of medication that the doctor write it to patient (including each medication , its id, name , quantity and dosage) .

- **Electronic Health Record (EHR) table** : including essential information like doctor and patient details, medical histories, allergies, and test results for seamless healthcare management. and Centralizes medical data tied to appointments and doctor seal.

- **Cart table:** This schema represents a shopping cart for medications, including medication_id, quantity, and totalPrice fields, streamlining the purchase process for patients.

- **Order table** : Represents orders that link patients to prescribed medications,include patient id and list of medication ordered by the patient) facilitating smooth order processing.

- **Payment table** : Handles payment processing for orders, capturing key fields such as patient id , order id , payment amount, currency , date , method(cash or by credit card) , and status(pending or completed).

- **Billing table** : Designed to handle financial records associated with patients and their medical orders, the Billing schema stores a detailed breakdown of medications, including their quantity, price, total amount, and payment status.

    - Chabot table: Handles conversations between the patient and the chatbot. It includes: Message content (text, roles), patient id.

- The chat and notification data were stored in Firebase.

Entity Relationship (ER) diagram

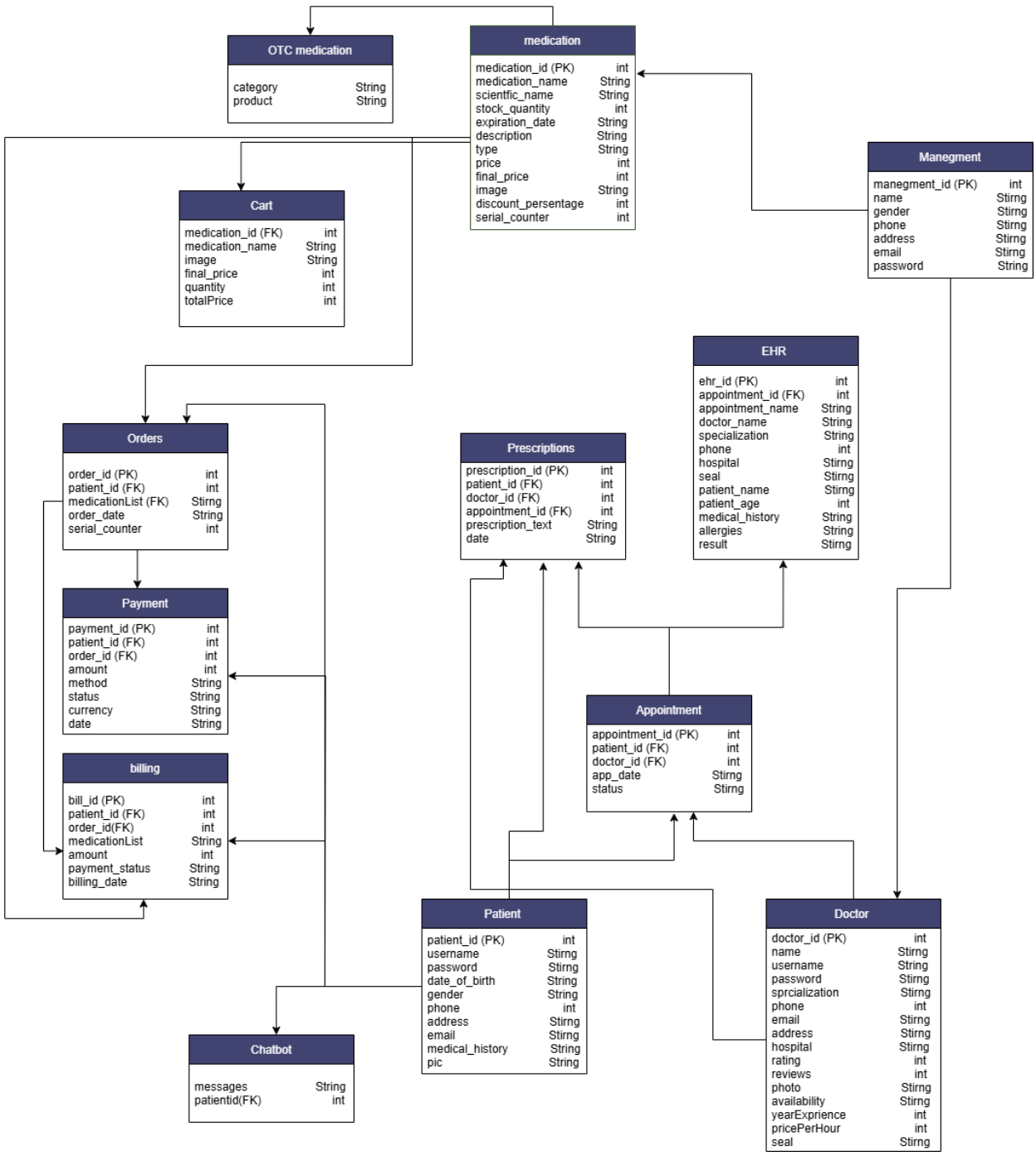


Figure 1 ER_diagram

4.2 Features Implementation

4.2.1 Mobile App

The mobile application, HealUp aims to streamline the interaction between patients and doctors, ensuring better accessibility, efficiency, and user satisfaction. By integrating key features such as online appointment booking, pharmacy access, medication availability, and enhanced communication, HealUp seeks to transform the healthcare experience for patients and providers alike.

4.2.1.1 Main screen

The Main Screen serves as the entry point to the application, designed to deliver a user-friendly experience. Upon opening the app, users are greeted with an interactive welcome page where they can select their role to proceed further. The available roles include Patient, Doctor, or Management, From this screen, users are seamlessly directed to the Login Page corresponding to their selected role.

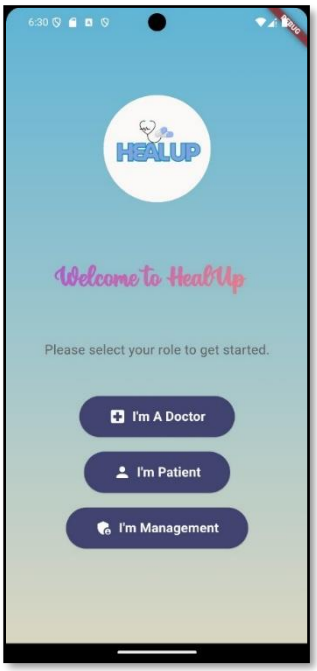


Figure 2 main screen

4.2.1.2 Patient login Process:

The Login screen for the application:

- allows patients to enter their email, and pass-word.

Error messages are displayed in real-time for invalid login attempts,

If the password or email entered is incorrect, the login attempt will fail. Offering clear guidance on resolving issues. The secure design of the screen ensures the protection of user credentials, fostering a safe and efficient login experience for patients.

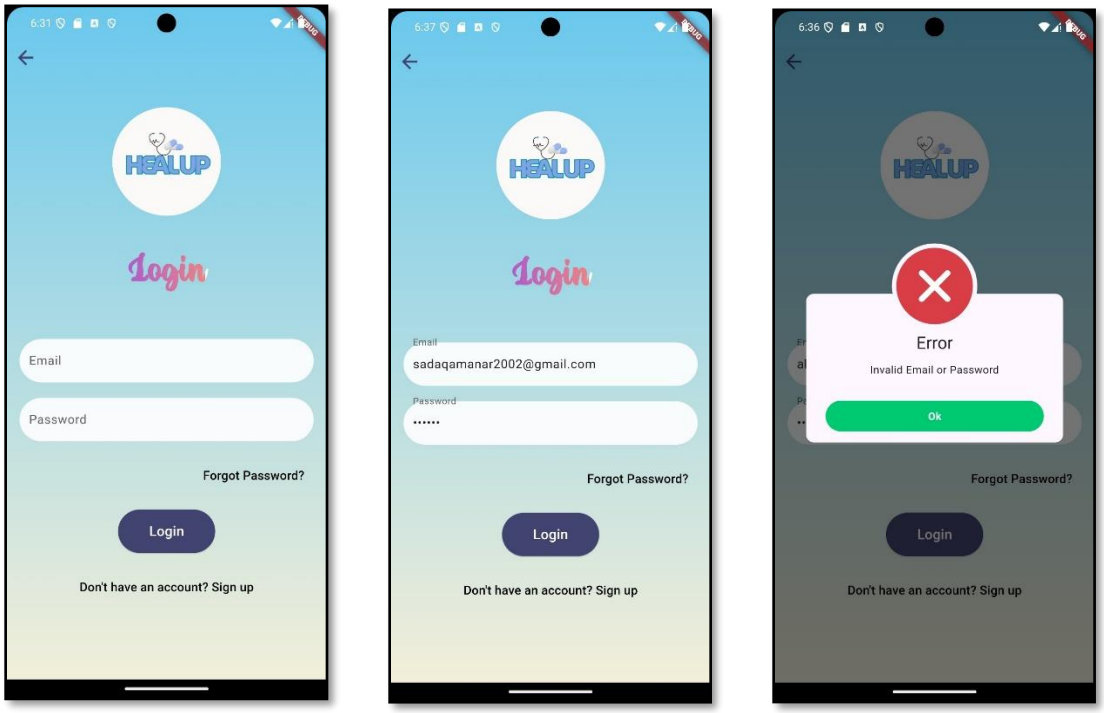


Figure 3 Patient login

- **A "Forgot Password?"** option to assist users in recovering their accounts.

When the patient selects the "Forgot your password?" option, the email address is validated. A confirmation message, "Confirm password reset," will appear, and the patient must click "Send reset link" to proceed. Once confirmed, a reset link is sent to the patient's registered email address.

By clicking on the link, the patient is redirected to a secure page where they can enter their New Password and Confirm Password. After clicking OK, the password is successfully updated, and the patient is redirected to the Login screen to securely access their account.

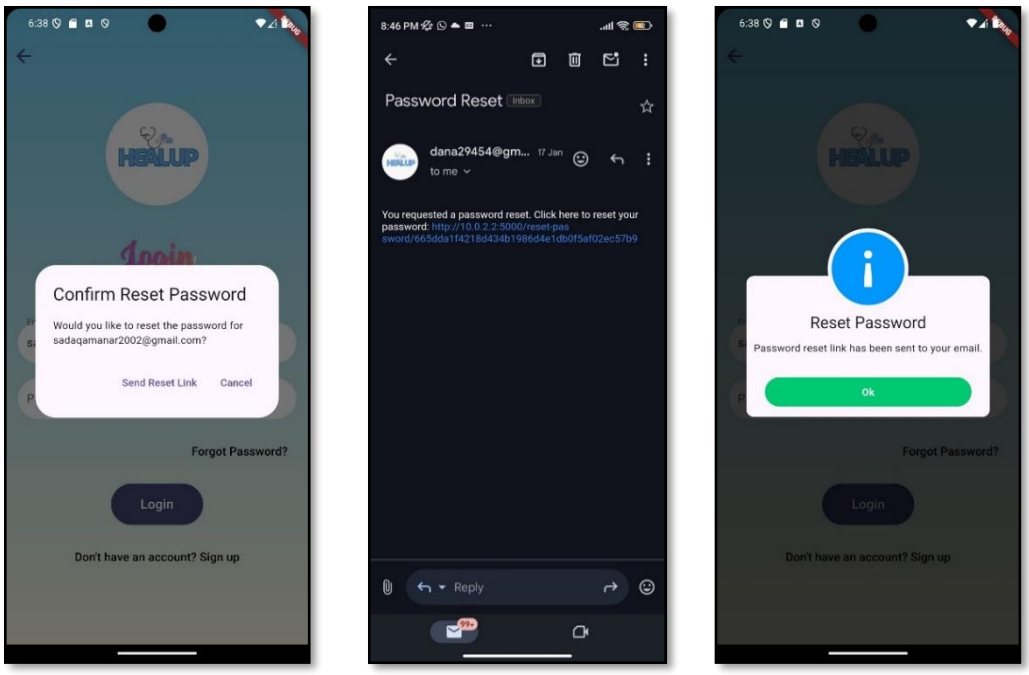


Figure 4 patient_reset_password 1

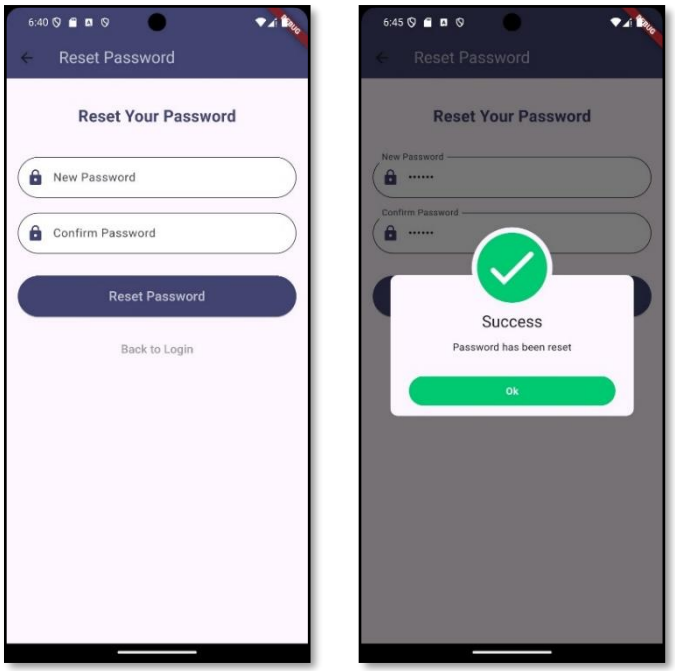


Figure 5 patient_reset_password 2

- For the new patient, a **Sign-Up button** is provided, allowing them to quickly create an account and gain access to the application's features.

When the patient clicks on the Sign-Up button, they are go to the **Sign-Up page.**

Sign up page:

The Sign-Up screen allows patients to create an account by entering essential information:

Email, Username, Phone Number, Date of Birth, Gender, City, Chronic Diseases (if any), and Password.

After filling in these details and accepting the terms and conditions, a confirmation email is sent to the patient's registered email address. The email contains a verification link, which the patient must click to confirm their account.

Once the verification is completed, the patient's registration is finalized, and they are redirected to the Login screen, where they can securely log in and access the application's features. This process ensures that only verified accounts gain access, enhancing security and trust.

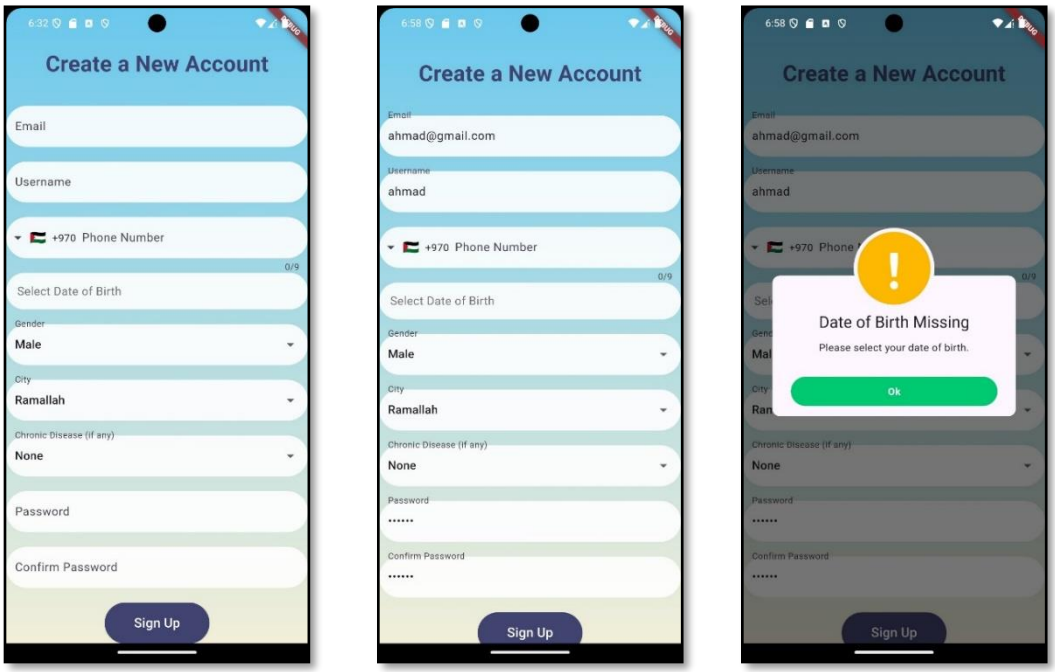


Figure 6 patient_signup 1

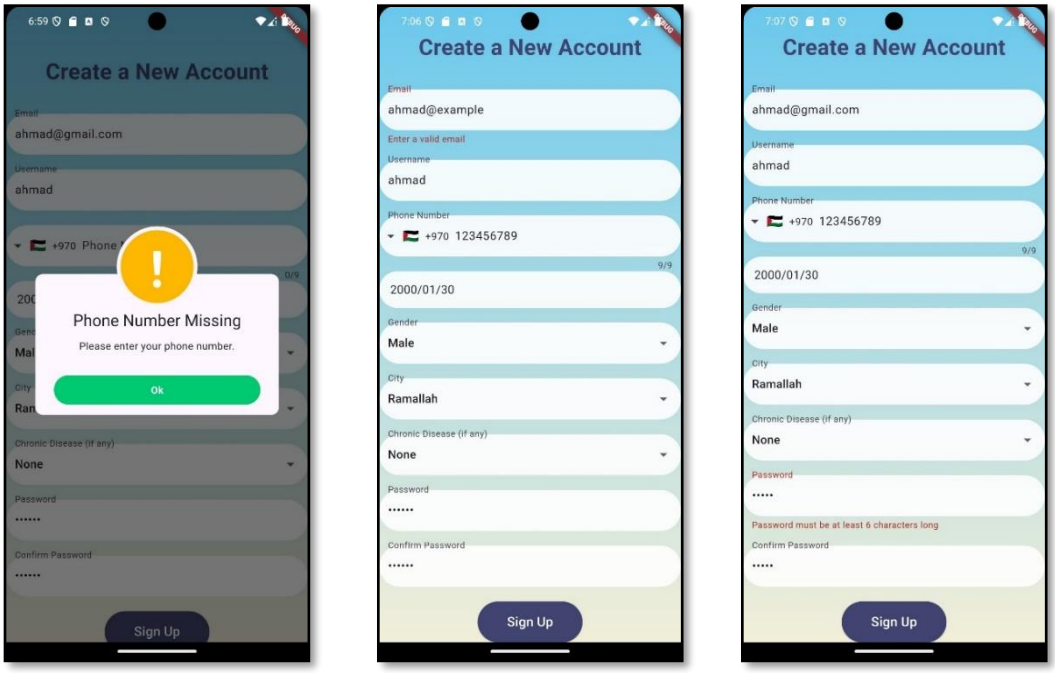


Figure 7 patient_signup2

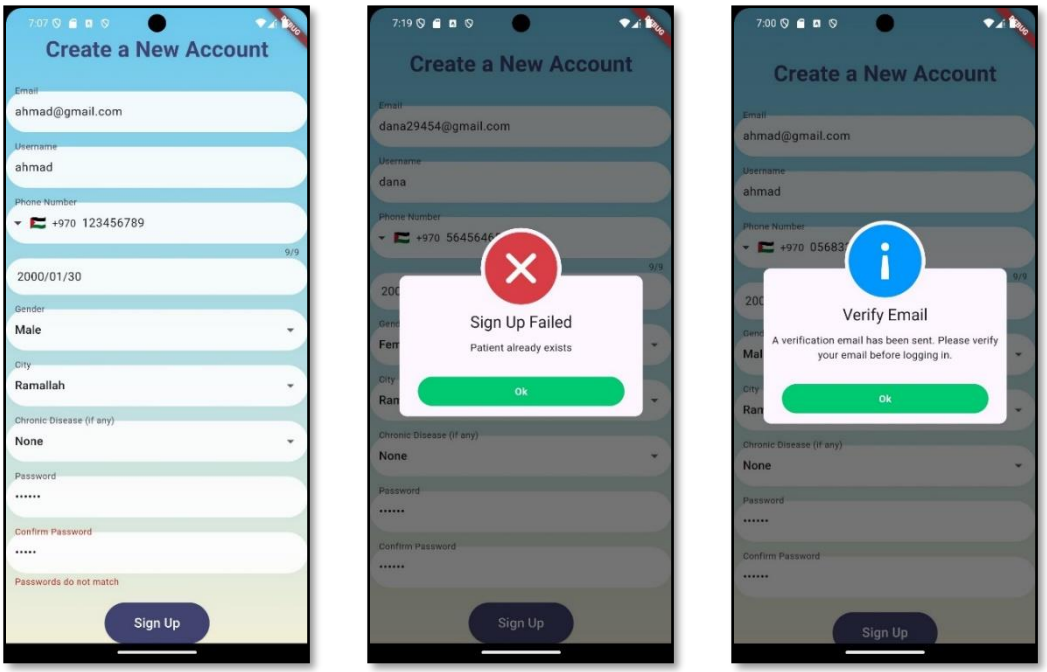


Figure 8 patient_signup3

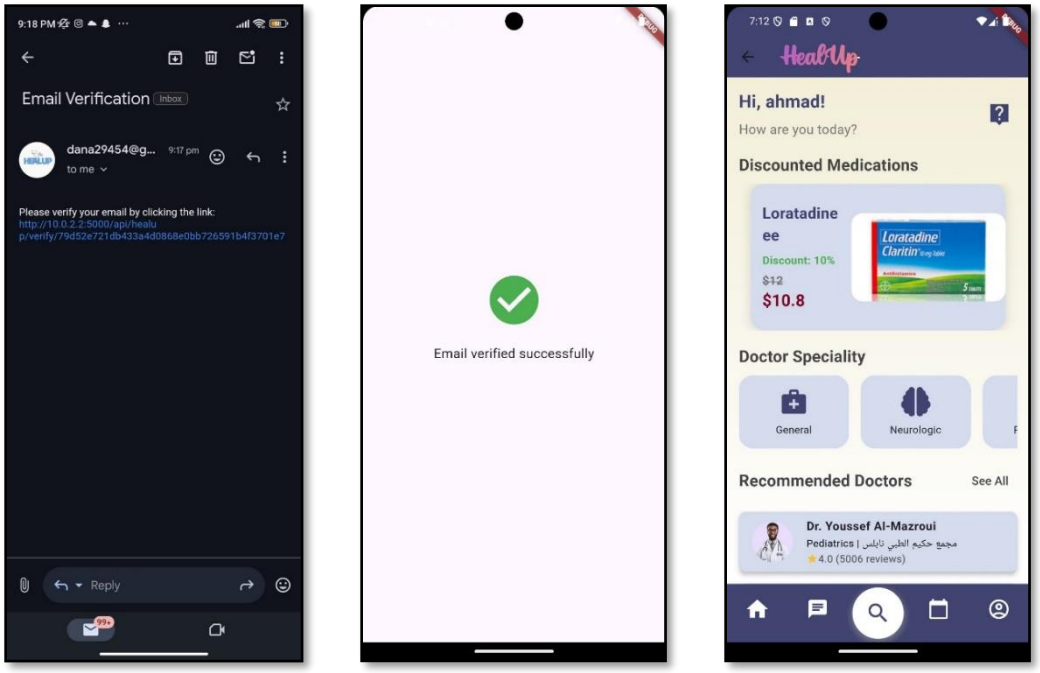


Figure 9 patient_signup 4

Home Page Navigation for Patients:

The Home Page serves as a central, allowing patients to easily navigate between various pages via the bottom navigation bar. The available pages include:

(Home Screen, Chat Screen, Search Screen, Appointments list Screen, Profile Screen)

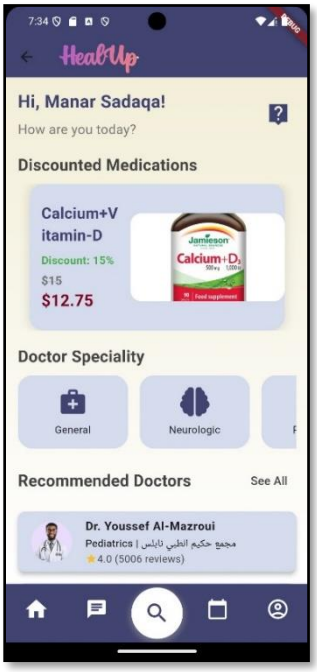


Figure 10 patient home screen

1. Home Screen

The Home Screen displays four key sections to assist patients in managing their healthcare needs:

- **ChatBot Icon :**

When selected, the patient is directed to the **ChatBot Screen**, which features an automated chat. The chatBot asks the patient about their symptoms, age, and gender. Based on the answers, the chatBot provides a potential diagnosis and recommends a medical specialty for further consultation. The chatBot uses an external API to dynamically generate the diagnosis and specialty recommendation.

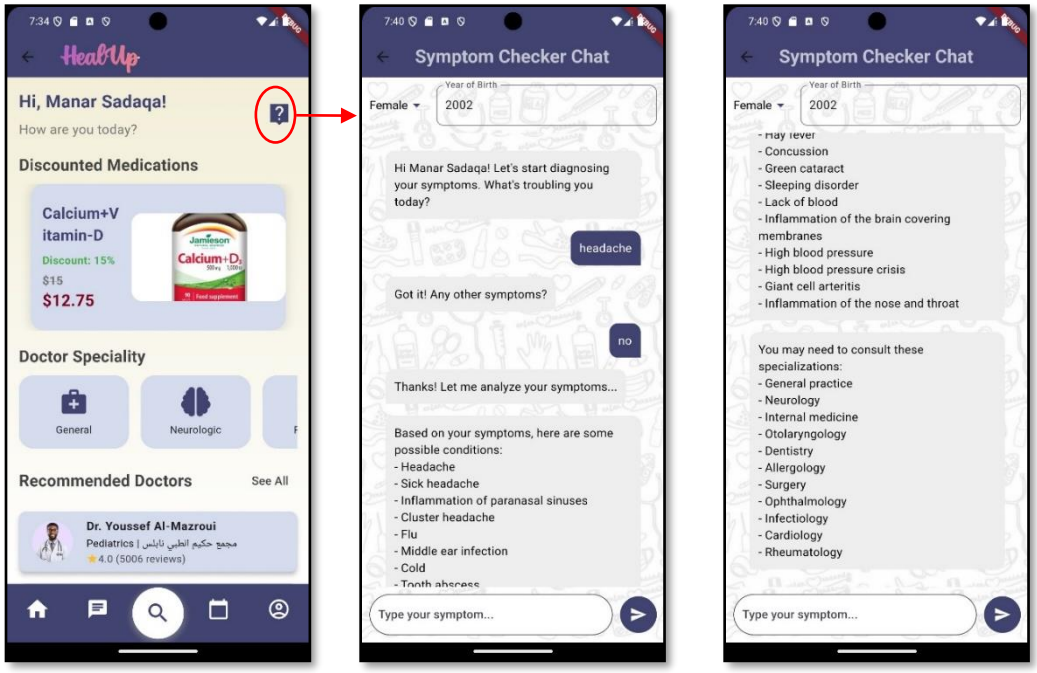


Figure 11 chatbot_icon 1

Another case:

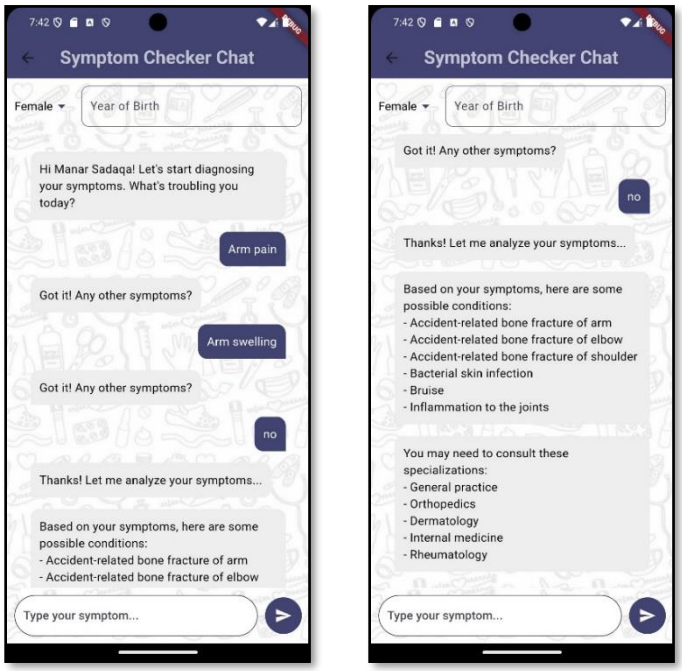


Figure 12 chatbot_icon 2

➢ Discounted Medication List

A slider interface allows patients to browse through medications with ongoing discounts.

Each item in the slider includes: Medication Name, Discount Percentage, Old Price, and New Price.

Patients can click on any medication to open the **Medicine Detail Page**, which provides: Medication details (name, description, image, price, dosage, an option to add the medication to their Cart for purchase.)

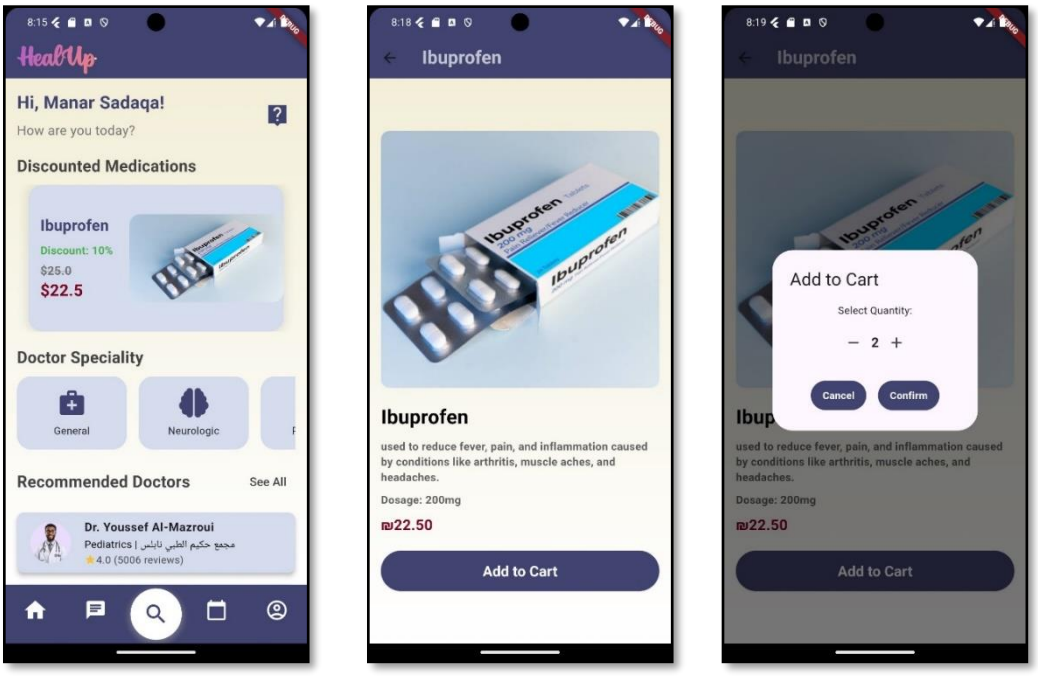


Figure 13 discount medication list

➢ Doctor Specialties List

Displays all available medical specialties.

Clicking on a specialty navigates to the **Specialty Page**, where a list of doctors in that specialty is shown.

When Selecting a doctor opens the **Doctor Detail Page**, displaying:

Doctor's profile (photo, name, specialty, years of experience, rating, price per doctor duration session, and location) and Available consultation times are presented through a calendar for days and slots for hours.

Patients can select a preferred appointment time and confirm the booking by clicking "Book Now" to send a consultation request to the doctor.

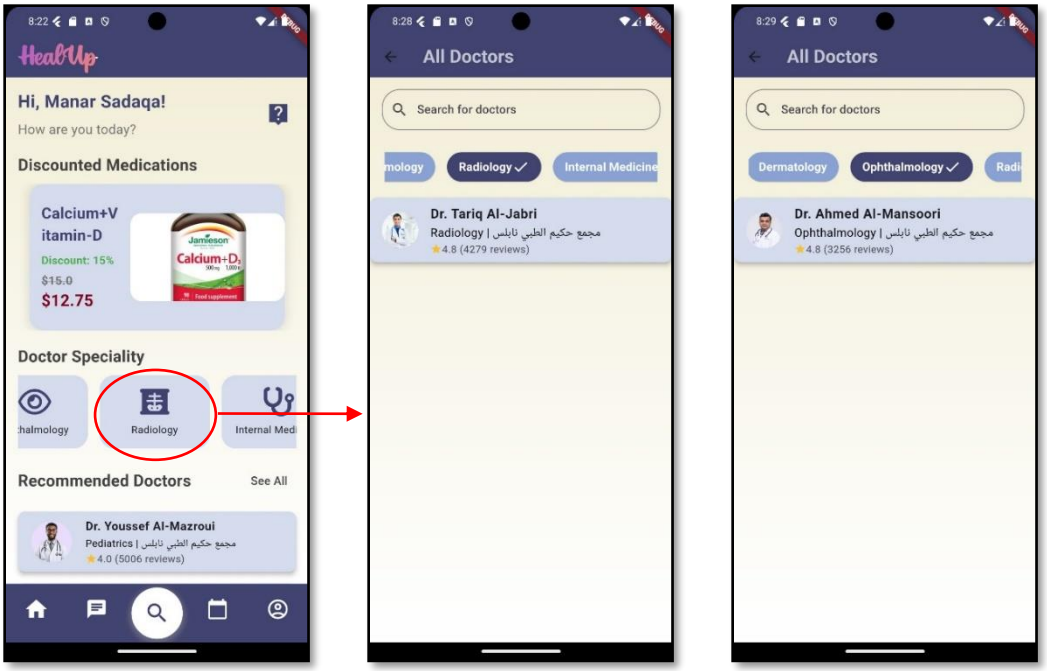


Figure 14 Doctor Specialties List 1

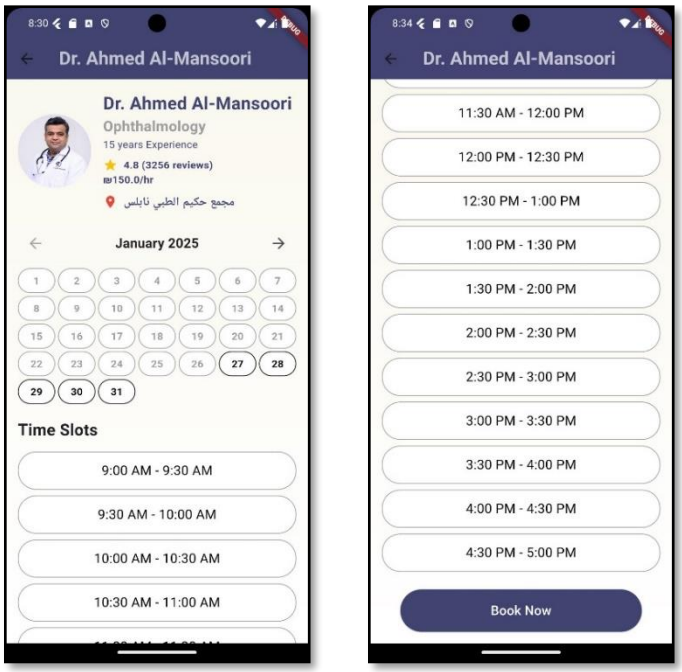


Figure 15 Doctor Specialties List 2

➢ Recommended Doctors List

Displays the top 5 doctors ranked by their ratings, showcasing those with the highest evaluations first. And when click on see all button , patient can open the all doctor list , Patients can click on a doctor's name to open their Doctor Detail Page and proceed with booking an appointment if needed.

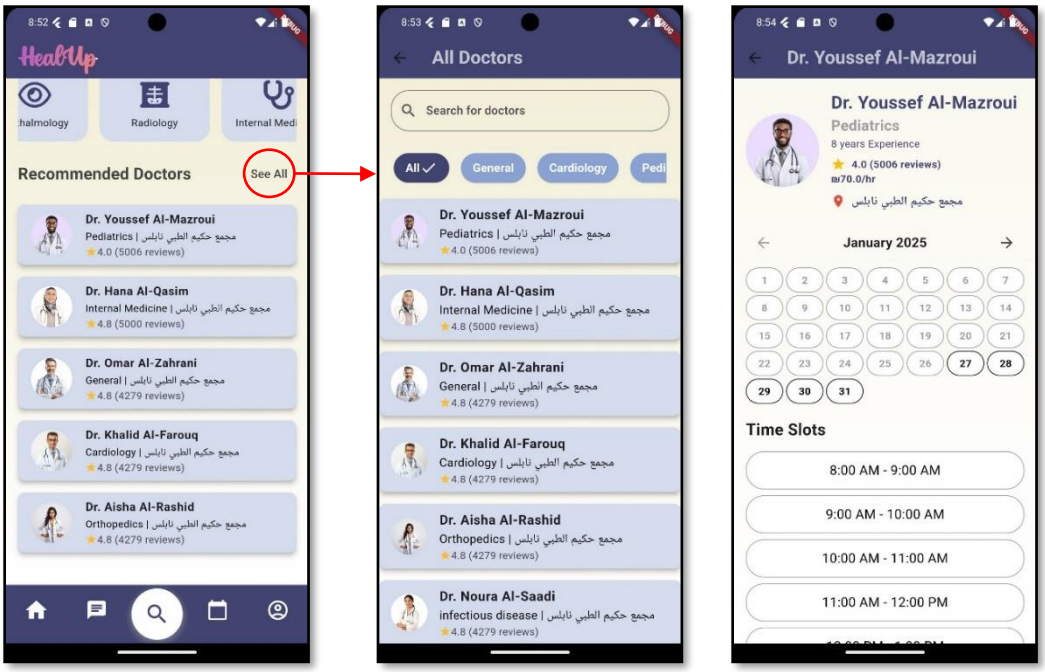


Figure 16 Recommended Doctors List

Search Tab:

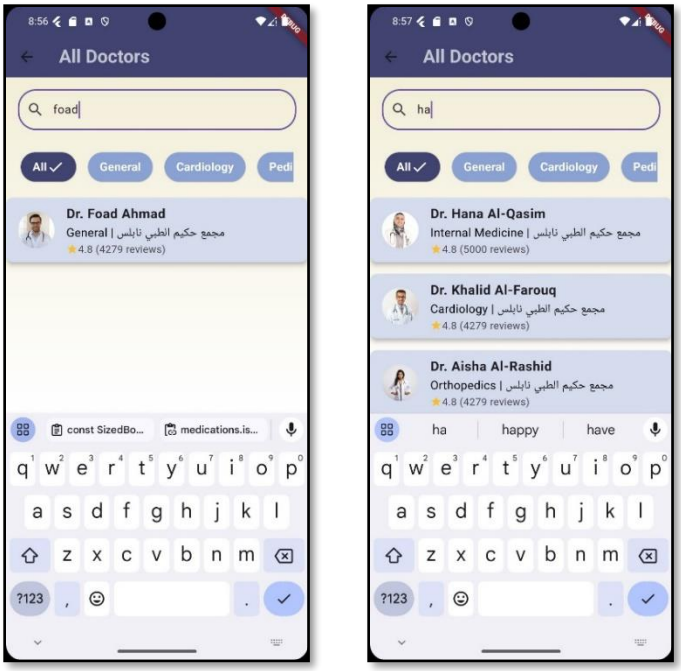


Figure 17 Recommended Doctors List_serach tap

Rating doctors:

When a patient rates a doctor, the doctor's rating is updated to reflect the new feedback, and the total number of reviews increases by one. This ensures that the doctor's overall rating is adjusted dynamically based on all patient reviews.

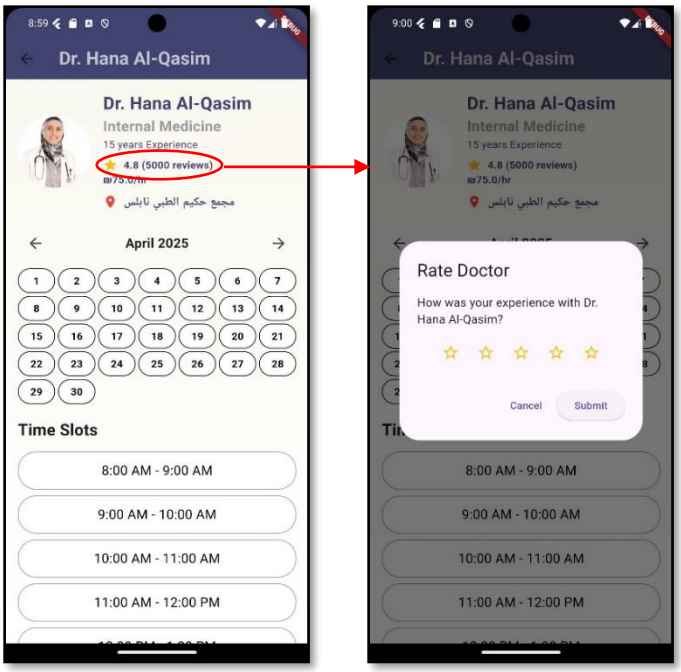


Figure 18 Recommended Doctors List_ rating doctors

See the location of the doctor and tracking it on the map:

When the patient clicks on the location button, a map is displayed showing the location of the medical center. The map also provides a feature to plot a route between the center and any location specified by the patient. This allows the patient to easily navigate and find the best way to reach the center from their current location or any other desired point.

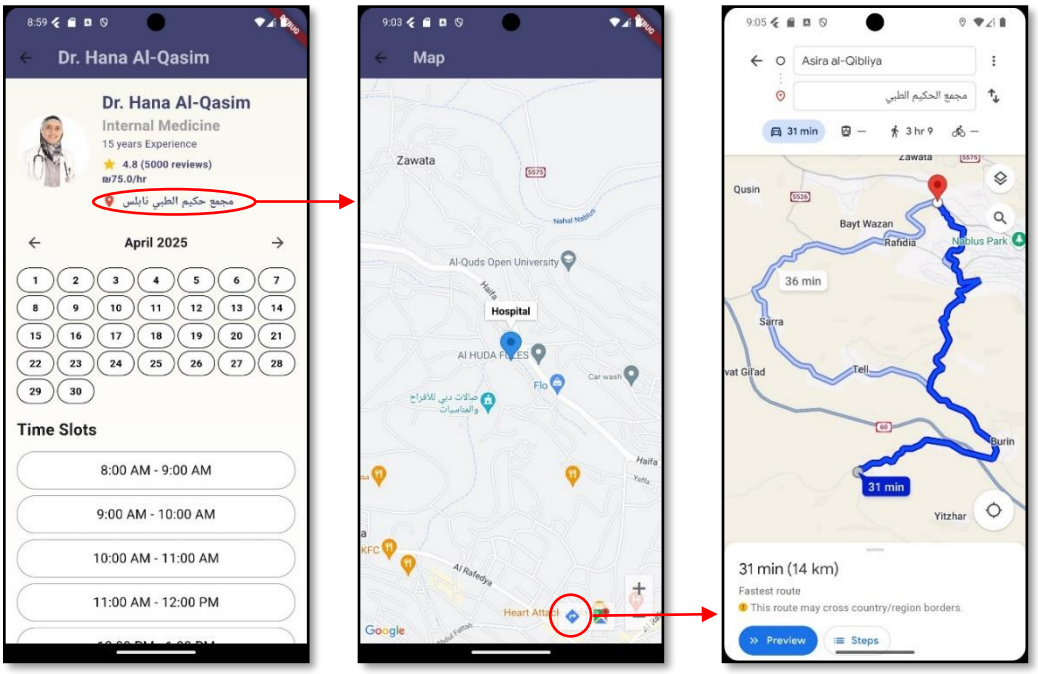


Figure 19 Recommended Doctors List_ doctor location

Booking appointment:

Patients can swipe through the calendar to select a suitable date for booking an appointment. The system prevents selecting past dates, such as yesterday. Additionally, time slots represent the duration and timing of appointments. Patients are unable to book time slots that have already been reserved, ensuring accurate scheduling and availability management.

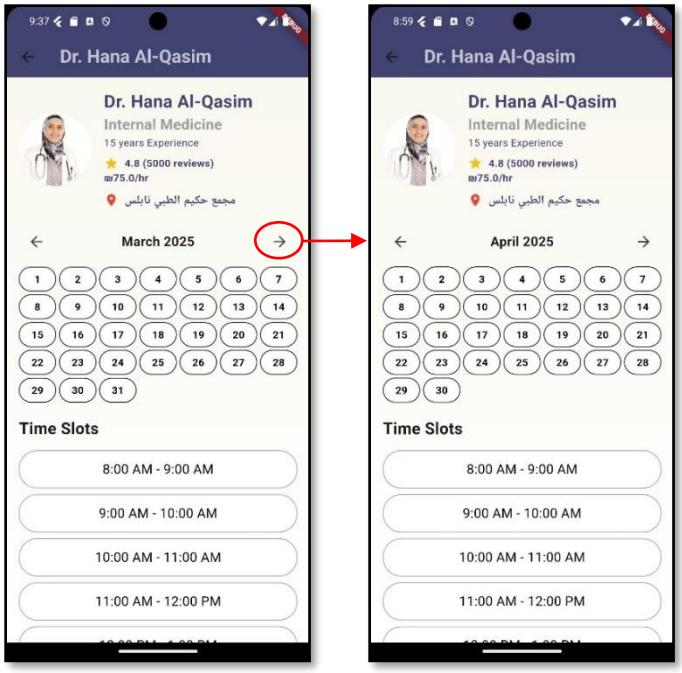


Figure 20 booking appointment 1

Cases of book appointment (the first one failed because the appointment was already booked, the second one is successfully booked because the time available):

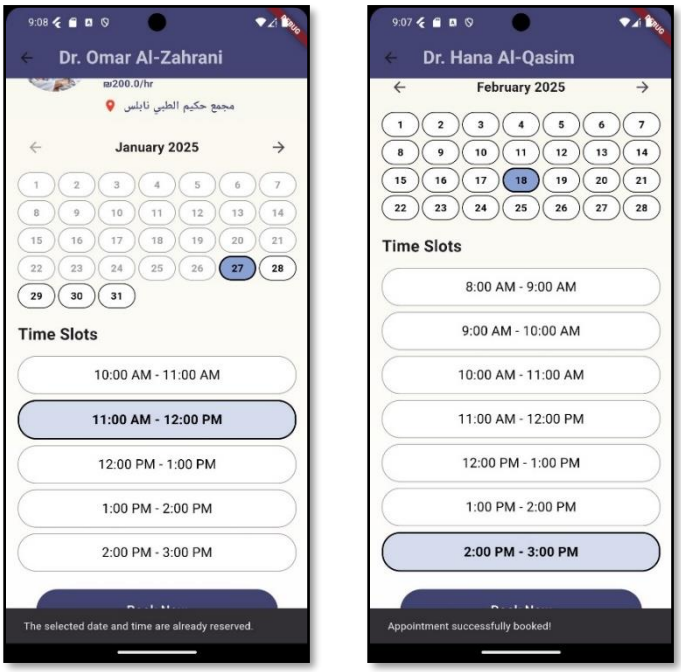


Figure 21 booking appointment 2

This structure ensures an intuitive and user-friendly experience, enabling patients to efficiently explore medications, connect with specialists, and manage appointments seamlessly.

2. Chat Screen

The Chat Screen displays a list of conversations between the patient and doctors, providing an organized interface for seamless communication. At the top of the screen, a **search bar** allows the patient to search for a doctor by name or specialty to initiate or continue a conversation. Each conversation in the list displays the most recent message exchanged, offering a quick overview of the interaction. Unread messages are highlighted with a red dot and are prioritized at the top of the list. Once the patient reads an unread message, its status changes to "seen," the red dot disappears, and the conversation returns to its normal position in the list.

By selecting a doctor's name from the list, the patient is directed to the **Chat Page**, where they can exchange messages with the doctor in real-time. The chat functionality also supports image sharing, this feature ensures effective interaction, fostering a smooth and efficient consultation process.

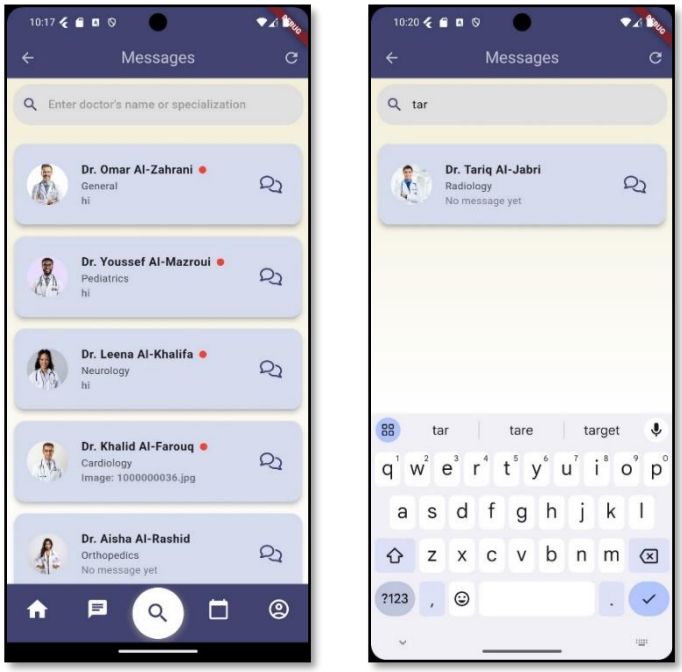


Figure 22 patient chat screen 1

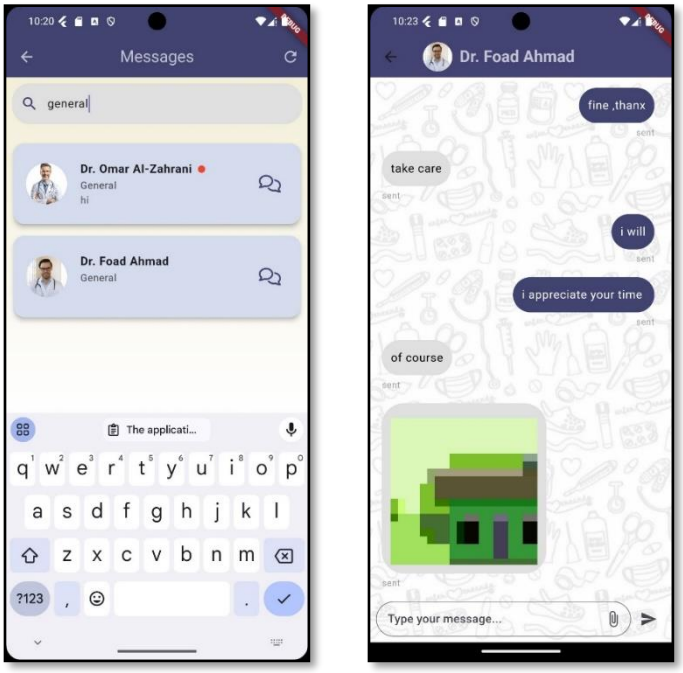


Figure 23 patient chat screen 2

3. Search Medicine Screen

The Search Medicine Screen allows patients to browse and purchase over-the-counter (OTC) medications without the need for a prescription. The medications are categorized by type, with **each category displaying a list of associated medicines.** For each medication, the name, image, price, and an "**Add to Cart**" button are displayed. Upon selecting a medicine to add to the cart, the patient can specify the quantity and confirm the selection.

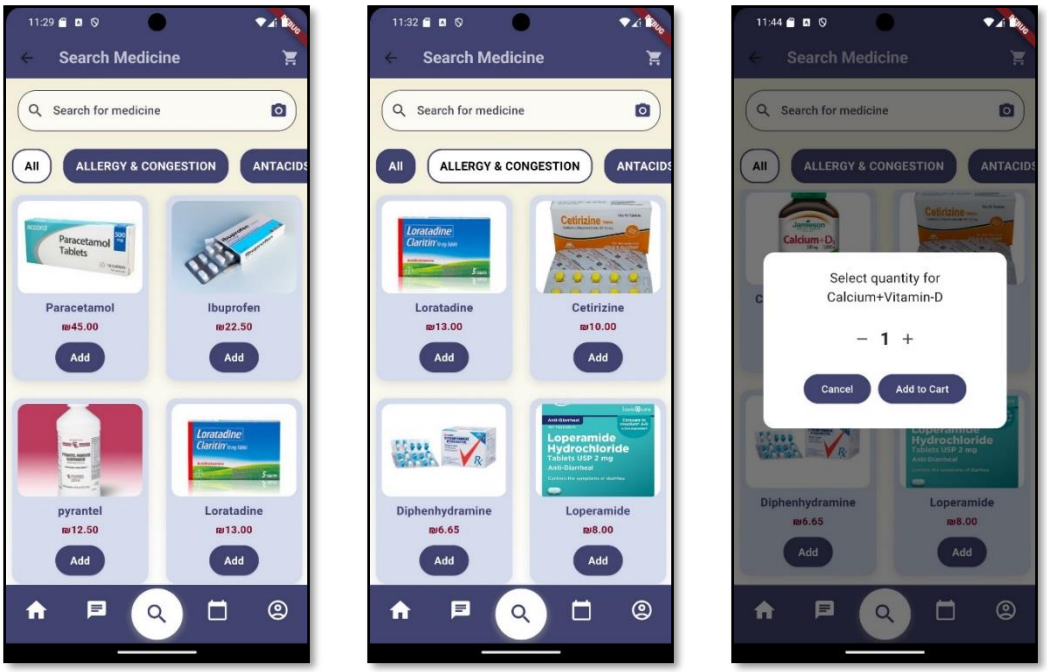


Figure 24 search medication page

If the patient taps on a specific medication, they are redirected to the **Medicine Detail Page**, where the medicine's image, name, description, price, and an option to **add it to the cart** (with quantity selection) are provided.

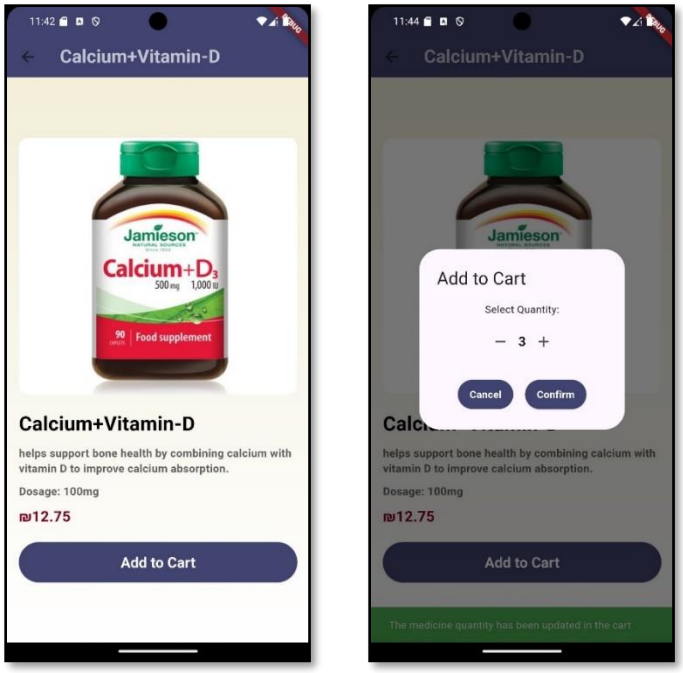


Figure 25 medication details page

At the top of the screen, a **<u>search bar</u>** is available, enabling the patient to search for medications by either typing the **<u>name or using the camera feature</u>** to scan the label of a medicine for identification and retrieval.

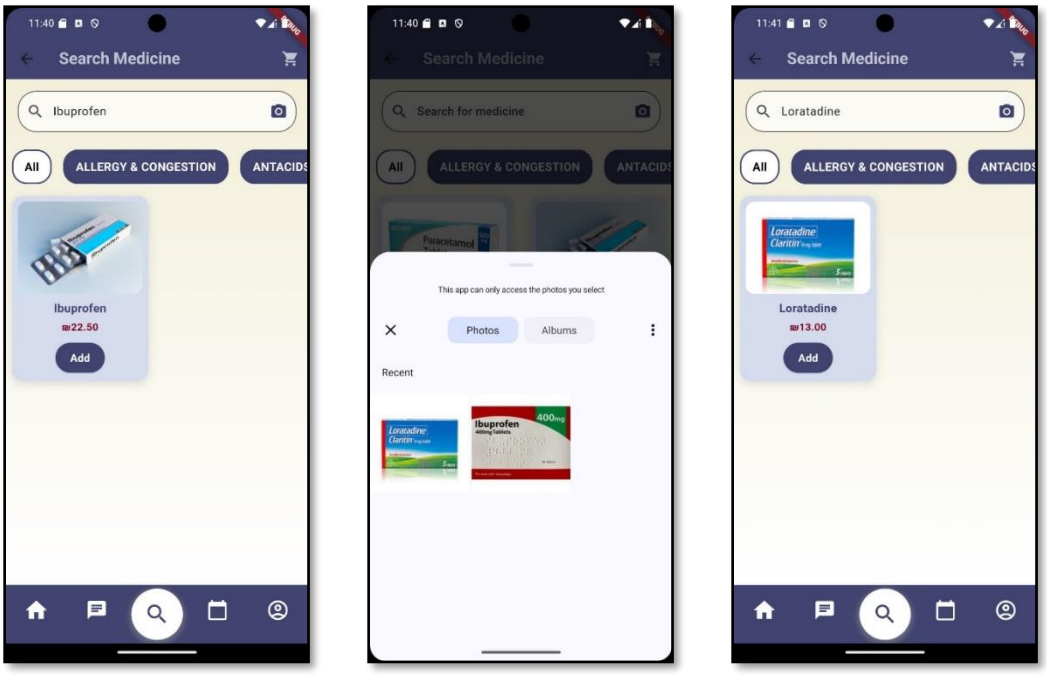


Figure 26 search page _search medication tap

An icon for the cart is also displayed at the top of the screen. When tapped, it navigates the user to **the Cart Page**, showing all the selected medications, their quantities, and the total price for each.

In the **Cart Page**, the patient has the following options:

- **Delete Icon**: Each medication has a delete icon that allows the patient to remove it from the cart.
- **Quantity Adjustment:** The patient can adjust the quantity of each medication using "+" and "-" buttons.
- Patients can use **checkboxes** to select specific medicines for purchase and proceed by tapping the **Confirm button** (at least one medication must be selected to be allowed to click), which redirects them to the **Confirm Order Page**.

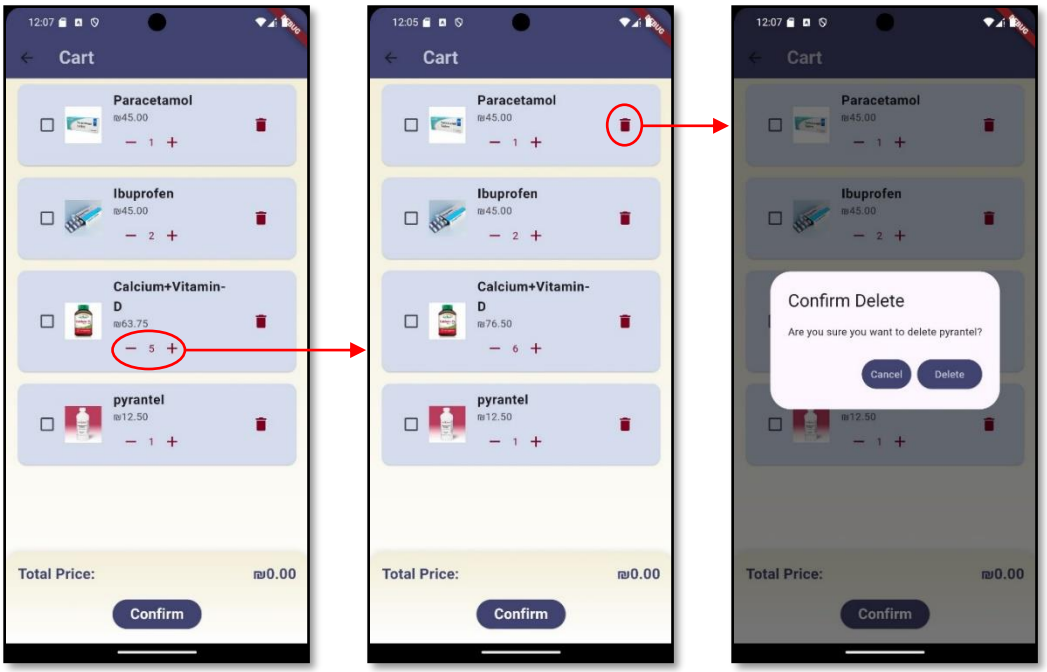


Figure 27 cart page 1

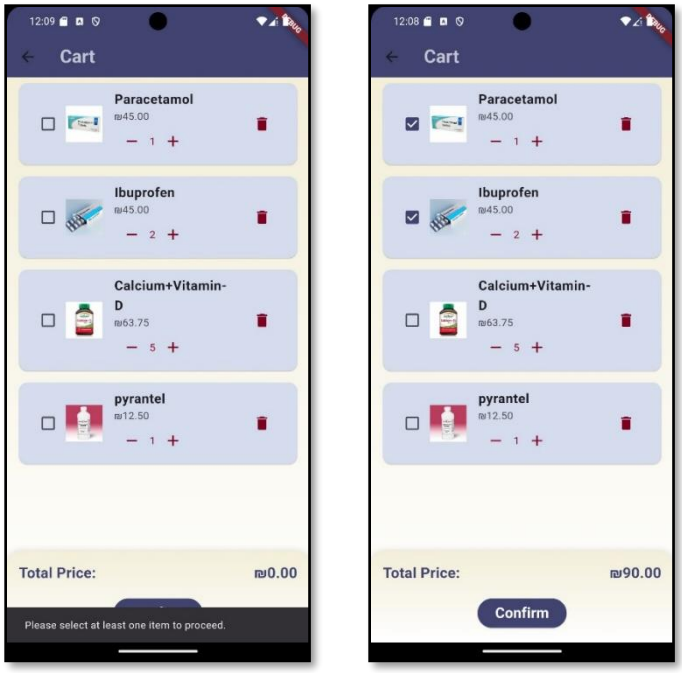


Figure 28 cart page 2

On the **Confirm Order Page**, patients **choose the delivery location and payment method:**

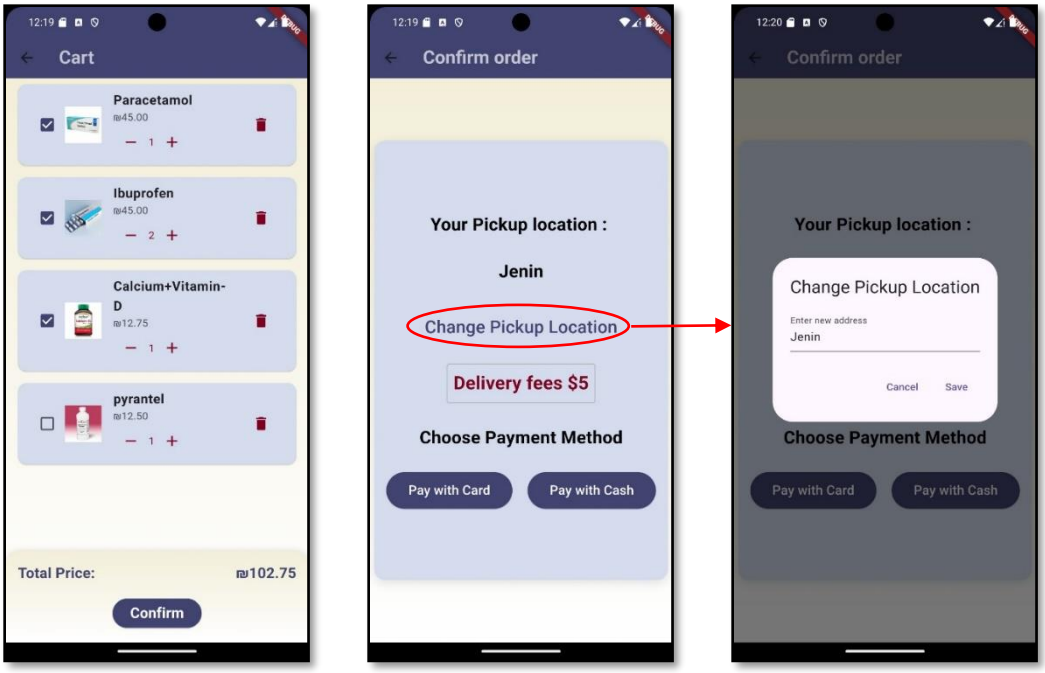


Figure 29 confirm order page 1

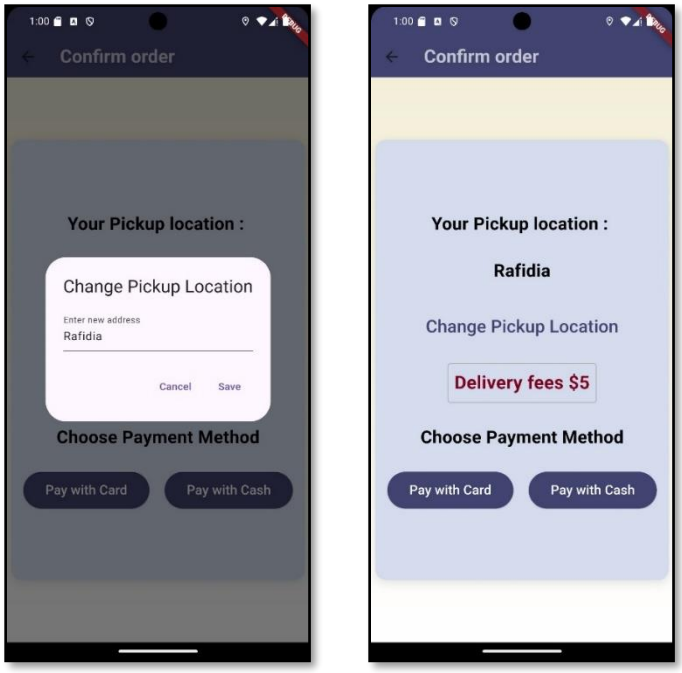
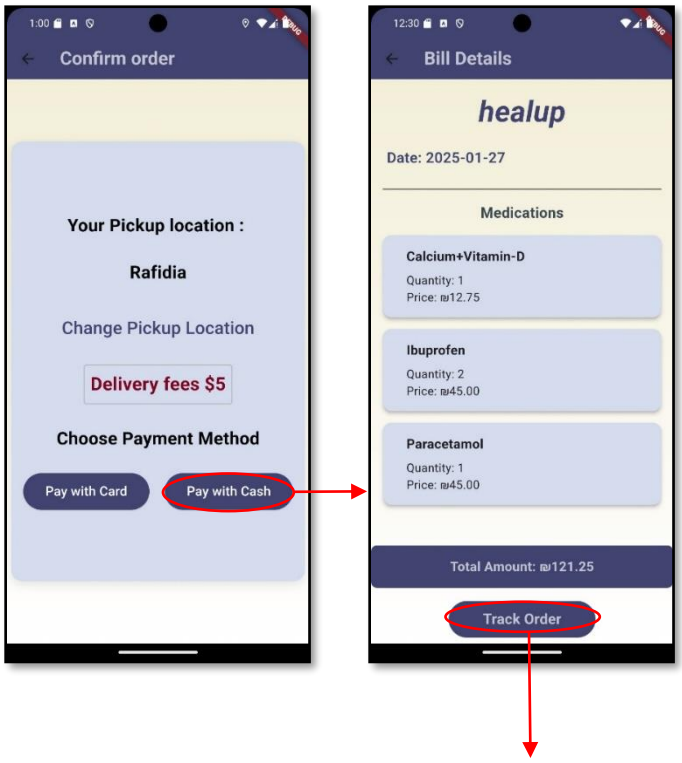


Figure 30 confirm order page 2

-**Cash:** Confirms the order and displays the **Bill Page**, which includes a detailed invoice (medicine list, total amount) and an **option to track the order live on a map.** When click on track order , go to the **map page** to track it live on a map.



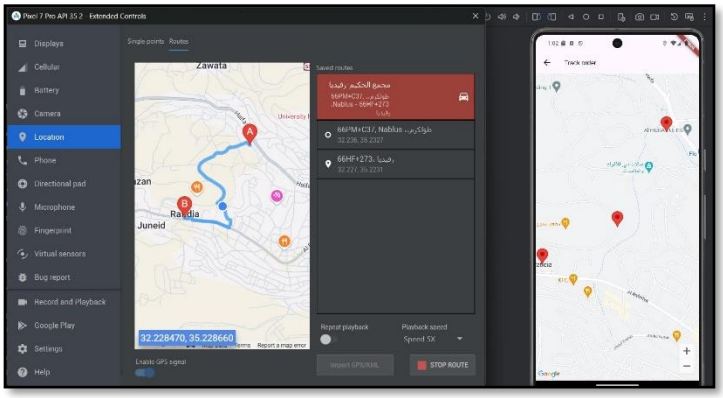


Figure 31 bill page & map page

-**Card:** Redirects to the **Card Information Page**, where the patient fills in their card details and confirms the payment. Upon successful payment, they are directed to the **Bill Page**, as mentioned above, with the **option to track their order.**

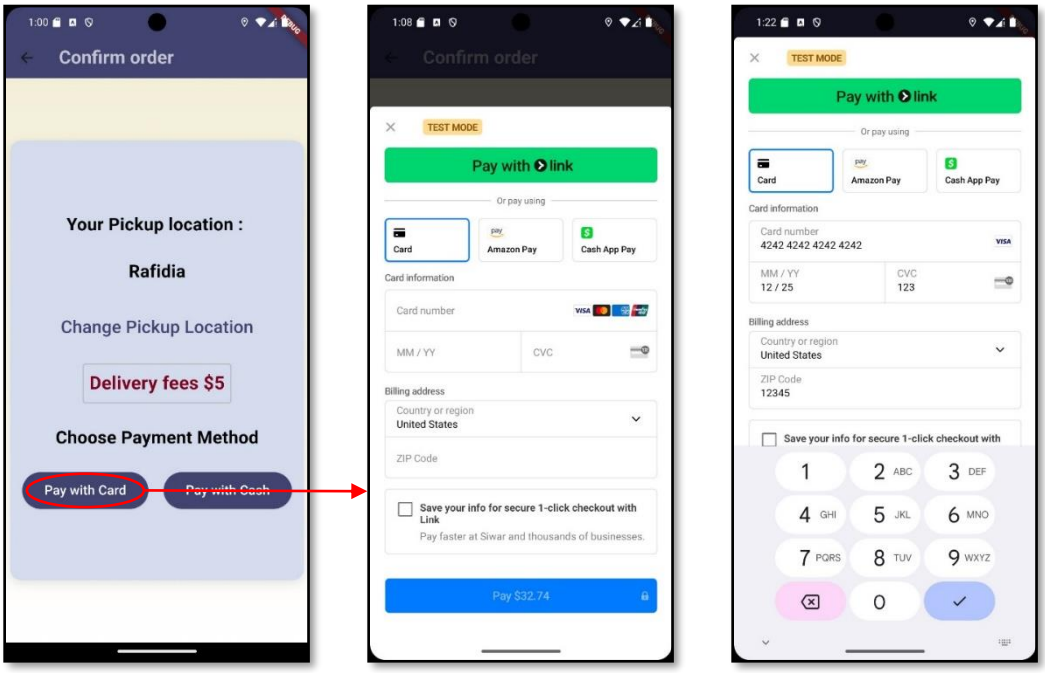
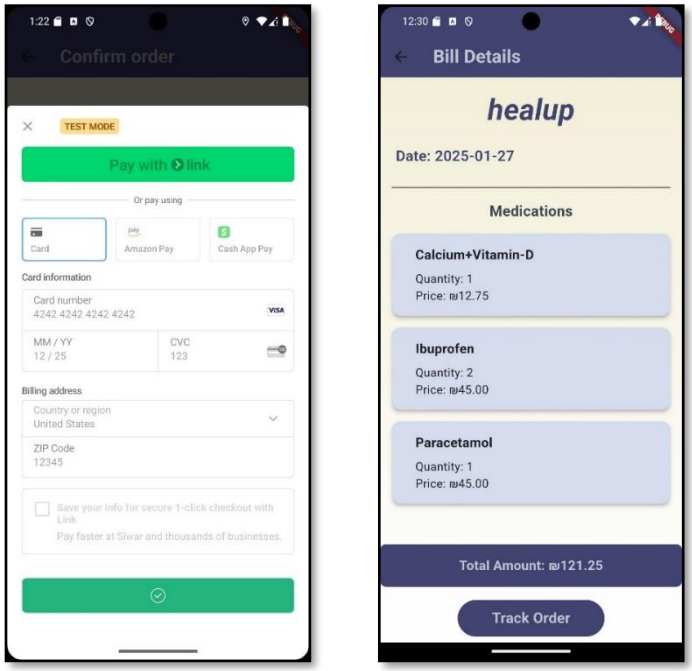


Figure 32 card information page1



* As cash methods
the patient can track the order
in the map

Figure 33 card information 2 & bill page

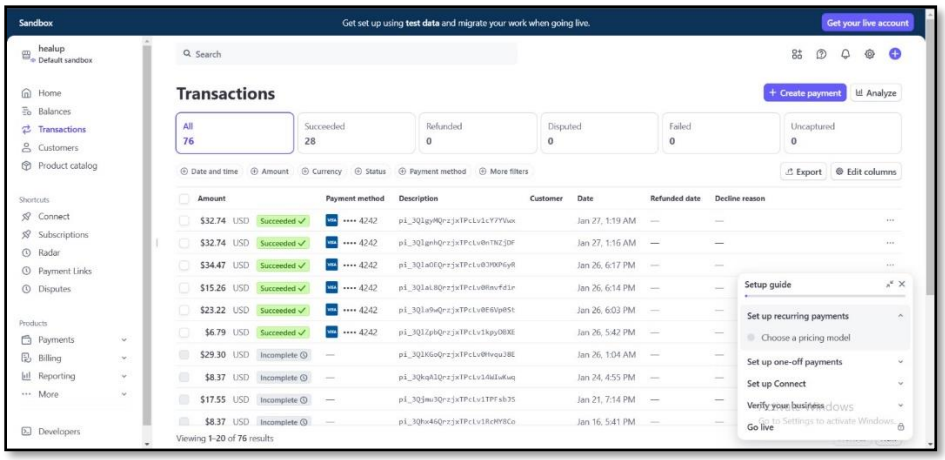


Figure 34 stripe payment list page

4. Appointment List Screen

The Appointment List Screen provides a comprehensive overview of the patient's bookings, categorized into 4 statuses: Pending and Canceled, Confirmed, Completed. Each booking displays key details, including:

(Doctor's Name, Specialty, Appointment Date, Time, Status of the Appointment (Pending and Canceled, Confirmed, Completed.))

- **Completed Appointments**

When an appointment status changes to Completed, it indicates that the consultation with the doctor has taken place. If the doctor has provided a prescription or an electronic health record (EHR), the patient can access these via dedicated icons:

-**Prescription Icon:**

Go to the **Prescription Page**, which displays: Doctor's Information, Patient's Information, Recommended Medications and Includes options to:

- **Download** Prescription as PDF
- **Add Order by Prescription**: Automates the process of purchasing the prescribed medications and directs the patient to the payment process.

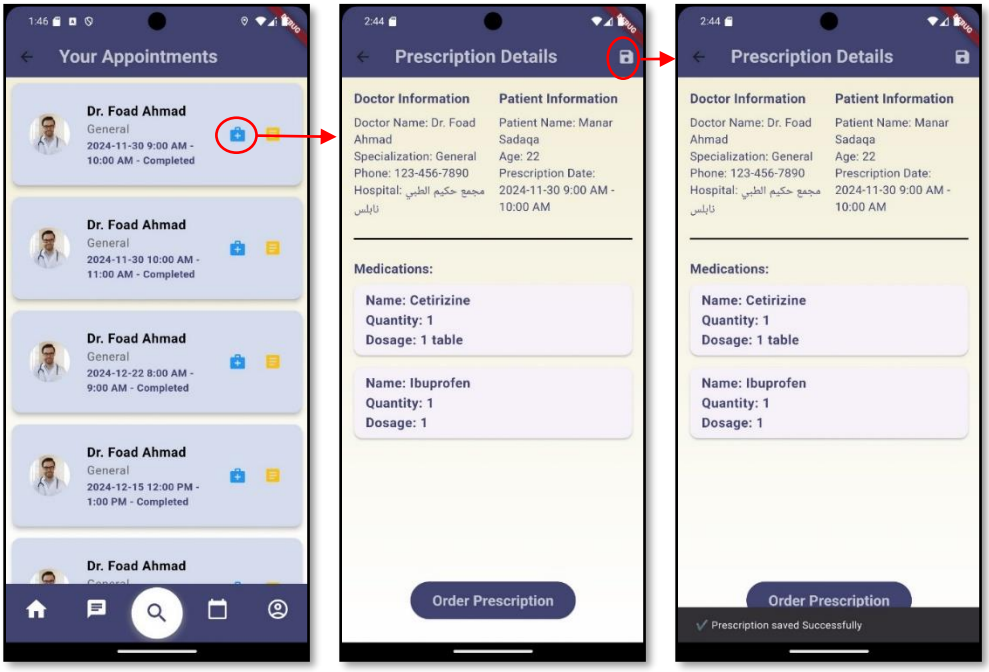
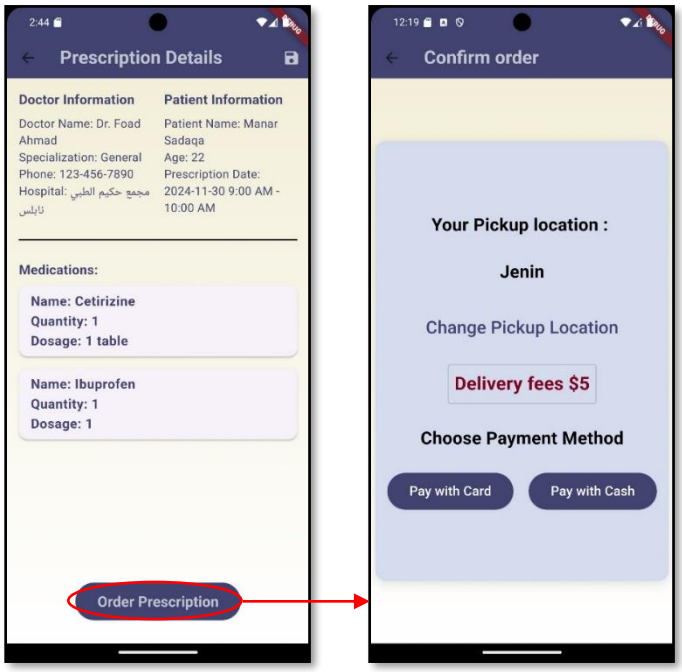


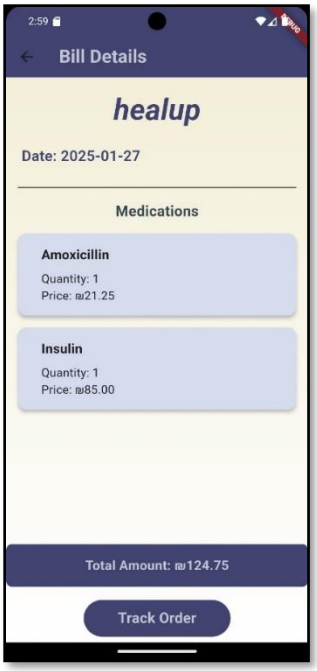
Figure 35 appointment list page & prescription page

Figure 36 download files page



*The patient can add order as the previous method
(can change pickup Location, and can select the payment method).

Figure 37 prescription page 2 & add order page



*This is the bill after add order (the medication in this case may not be on OTC list).

Figure 38 bill page

-EHR Icon:

Go to the **EHR Page,** where the following details are displayed: Patient's and Doctor's Information, Medical Report, including: Medical history, Allergies, results, Doctor's signature (seal)

- Allows the patient to **download** the Report as a PDF for offline use.

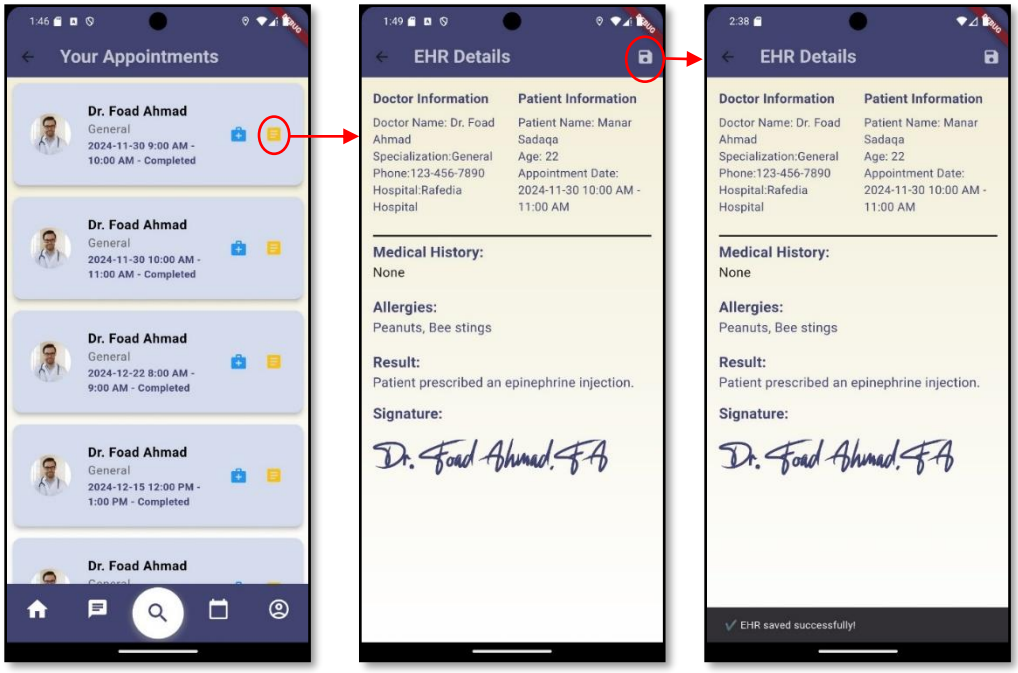


Figure 39 appointment list page 2 & EHR page

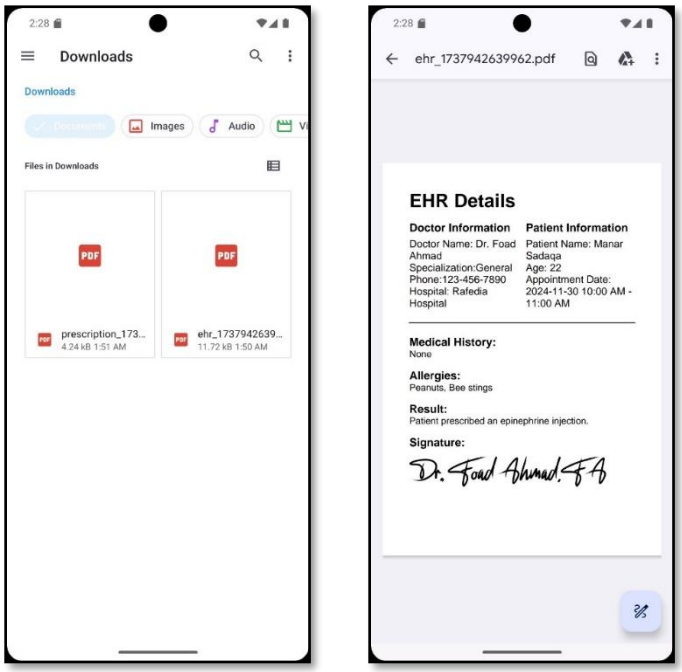


Figure 40 download files page & EHR pdf page

- If the doctor has not provided a prescription or medical report, **a notification is displayed:**

"The prescription is currently not available. Please try again later."

"The EHR is currently not available. Please try again later."

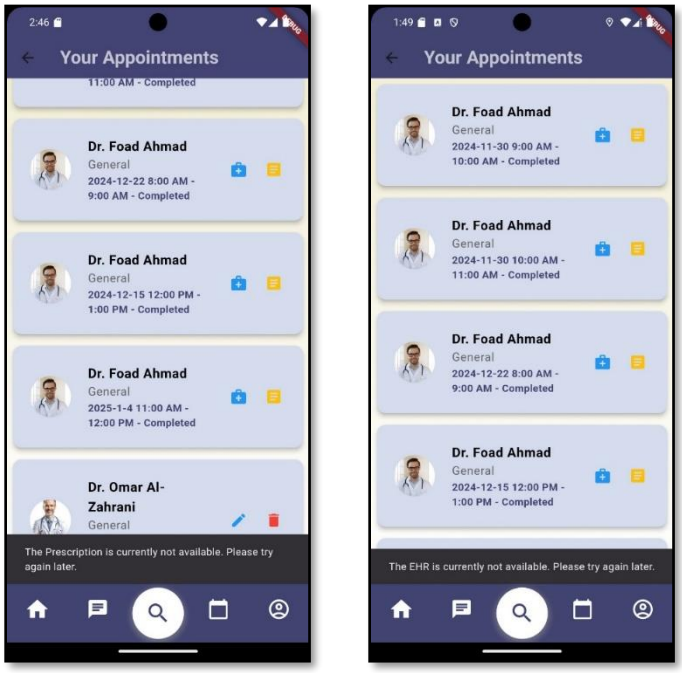


Figure 41 appointment list page 3

- **Confirmed Appointment**

A confirmed appointment indicates that the doctor has accepted the booking request. Patients can manage confirmed appointments with the following options:

-Edit Icon: Enables rescheduling the appointment. Modifications are restricted to available time slots starting from the current day. Past dates or unavailable times cannot be selected, provided it is at least 48 hours before the scheduled time.

-**Delete Icon:** Allows cancellation of the booking, provided it is at least 48 hours before the scheduled time.

➢ Pending Appointment

A pending appointment indicates that the doctor has not yet accepted or rejected the booking request. Patients can manage their pending appointments using the following options:

-Edit Icon , Delete Icon:

As the Confirmed Appointment.

Edit appointment:

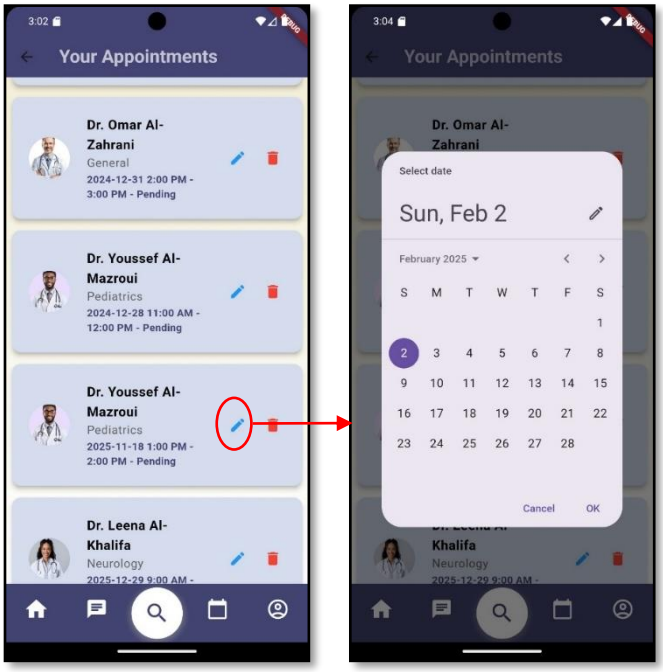


Figure 42 edit appointment 1

*The time slots list are from the times that are available to the doctor.

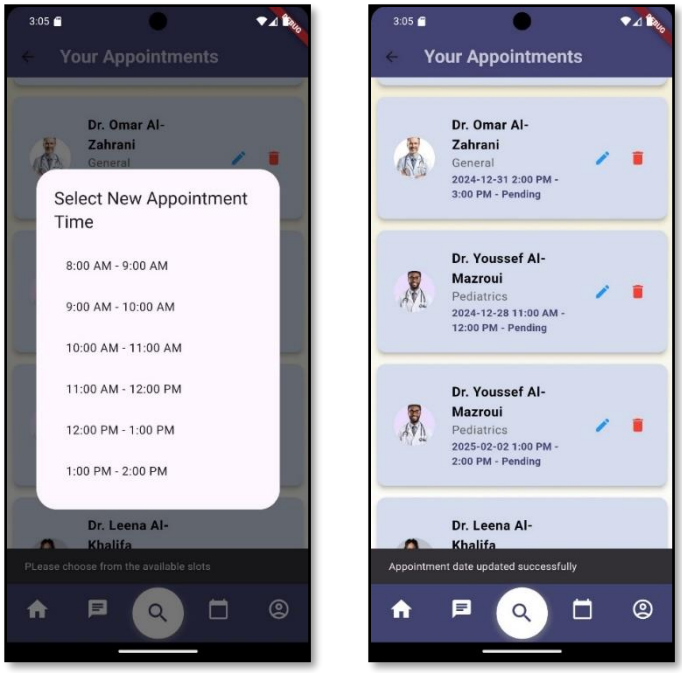


Figure 43 edit appointment 2

Delete appointment:

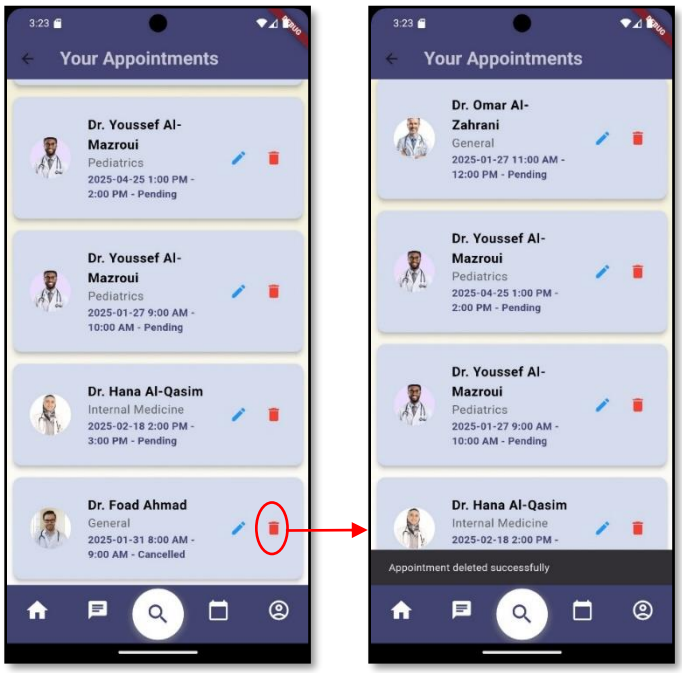


Figure 44 delete appointment

If the patient try to edit or delete an appointment less than 48 hours before:

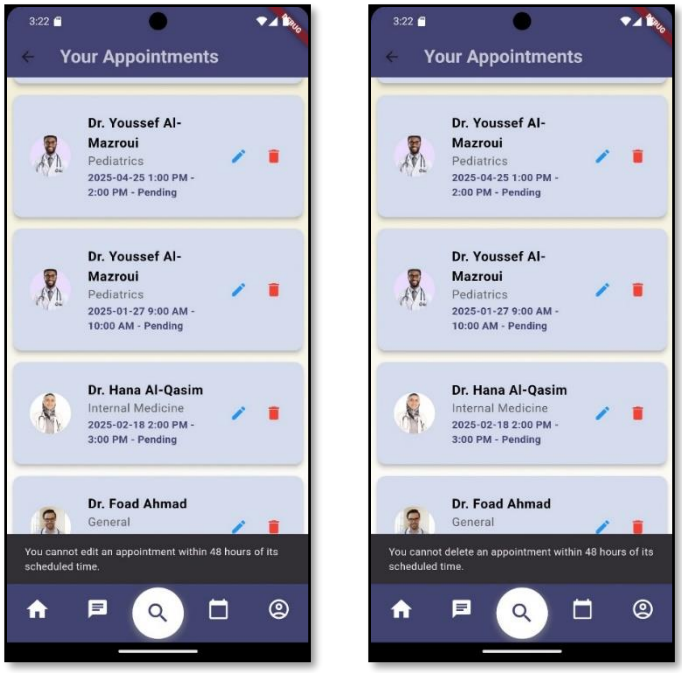


Figure 45 edit and delete errors

- **Canceled Appointment**

A canceled appointment indicates that the doctor has rejected the booking request. Patients cannot take further action on canceled appointments, as they are no longer valid.

5. Profile Screen

The Profile Screen displays the patient's personal information and allows them to update or modify it except email. The editable fields include:

Profile Picture: Upload an image from the device, Username, Address, Date of Birth, Phone Number, and Medical History. (Email cannot be changed)

After making changes, the patient can save updates by clicking the **Save Changes button.**

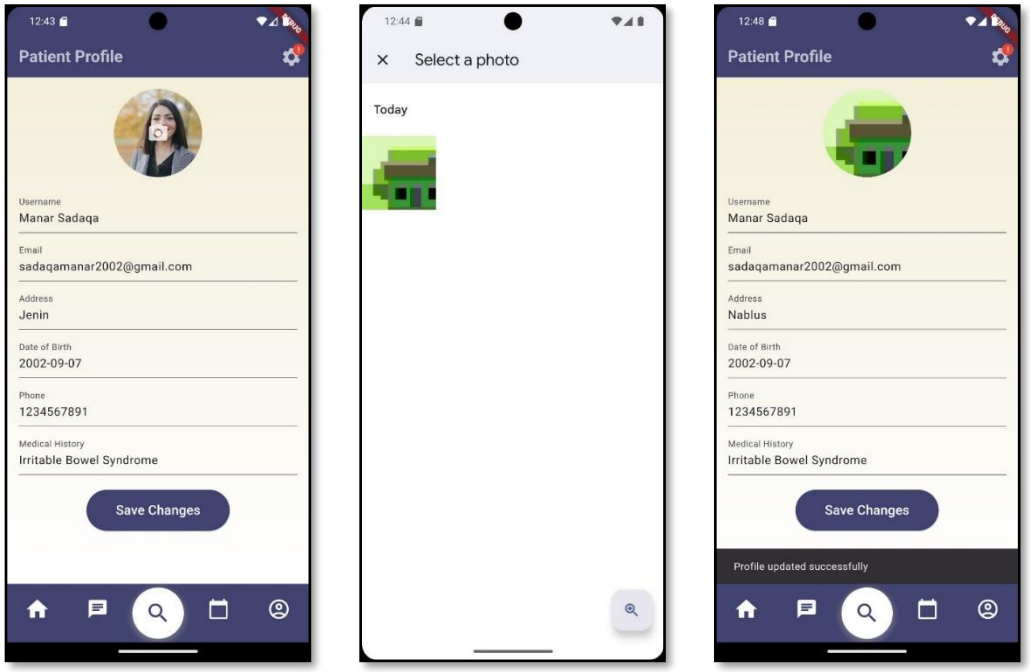


Figure 46 patient profile page

Settings Icon

Located at the top corner of the screen, the Settings Icon leads to the Settings Page, which includes the following options:

- **Dark Mode:**

Toggle to enable/disable the dark mode, changing the app's theme to a darker color scheme.

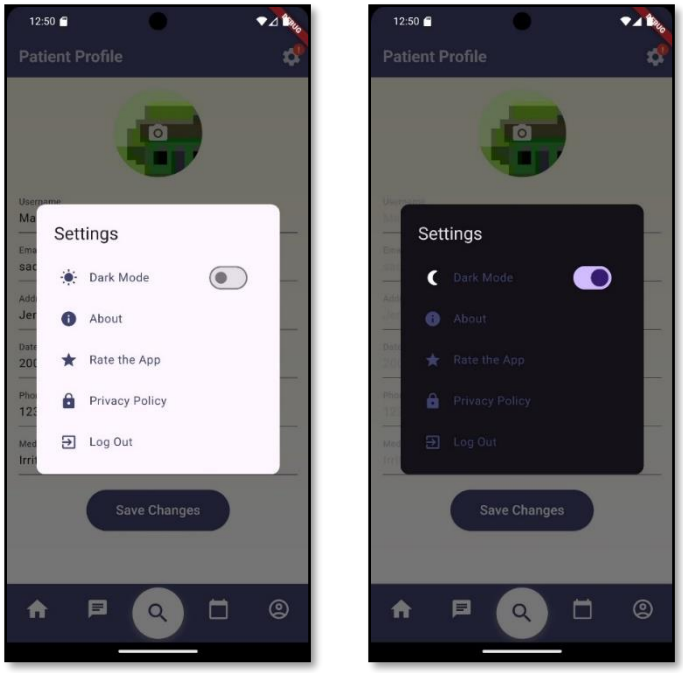


Figure 47 setting_ dark mode

- **About:**

Displays detailed information about the app.

Includes a View Licenses option, which shows a list of licenses used in the application.

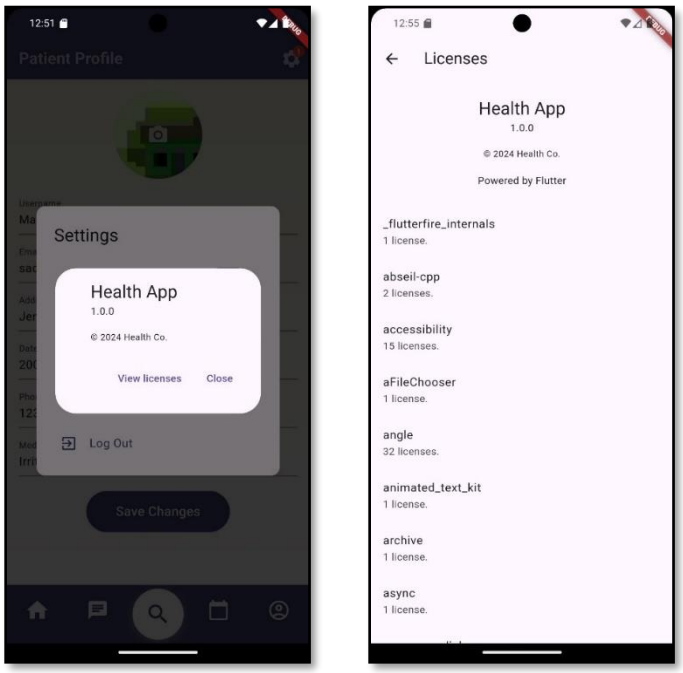


Figure 48 setting_ about

- **Rate the App:**

Allows the patient to rate the app on a scale of 1 to 5 stars.

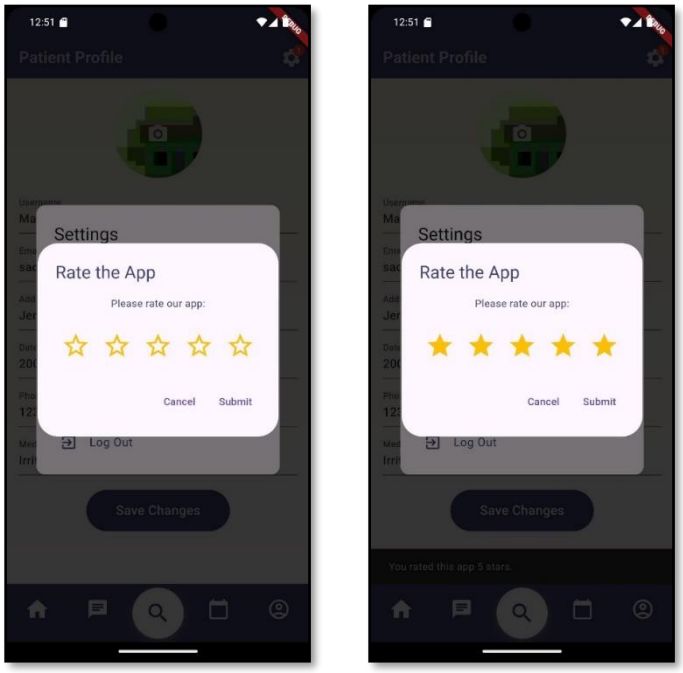


Figure 49 setting_ rate the app

- **Privacy Policy:**

Provides access to the app's privacy policy.

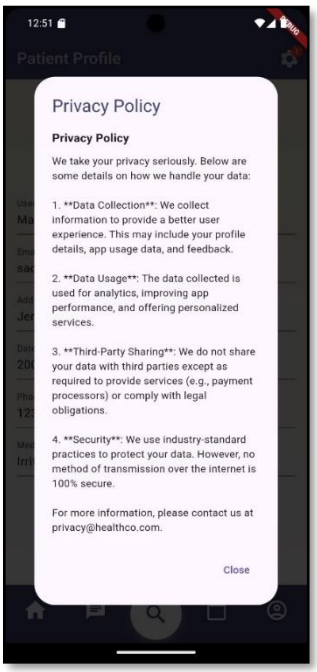


Figure 50 setting_ Privacy Policy

- **Log Out:**

Logs the patient out of the application and redirects them to the Login Screen.

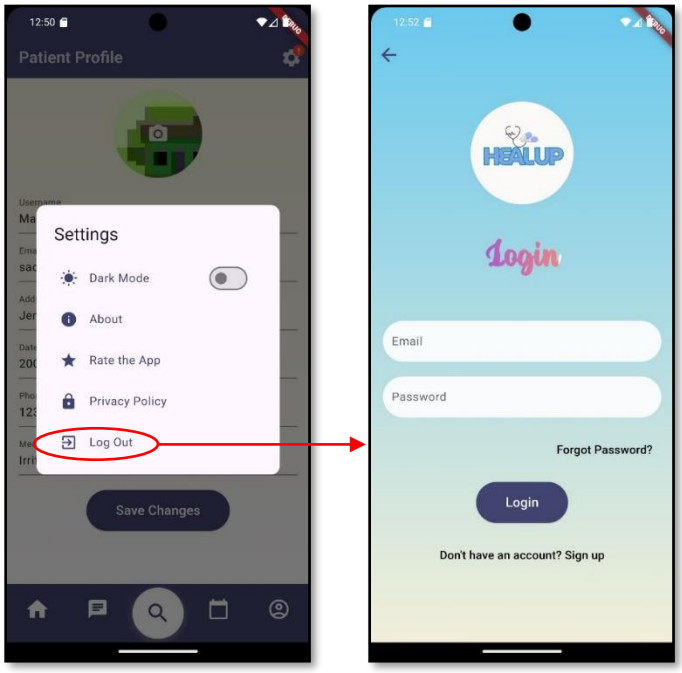


Figure 51 setting_ logout

4.2.1.3 Doctor login Process:

The Login screen for the application

Allows doctors to enter their email, and pass-word.

Error messages are displayed in real-time for invalid login attempts,

If the password or email entered is incorrect, the login attempt will fail. Offering clear guidance on resolving issues.

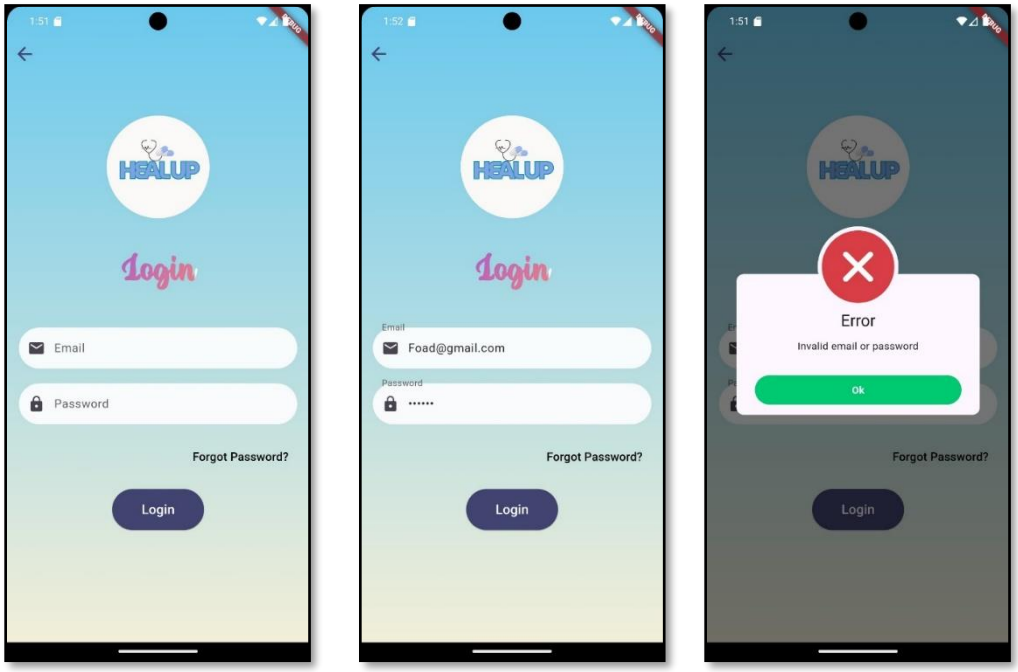


Figure 52 doctor login

Home Page Navigation for doctors:

The Doctor Login Process enables doctors to access their personalized Home Page, which provides seamless navigation to key features through a bottom navigation bar. The available pages include:

(Home Screen ,Search EHR Records Screen ,Chat Screen ,Profile Screen)

Figure 53 doctor home screen

1. Home Screen

The Home Screen is divided into three main sections:

- **Appointment Request List**

This section displays pending appointment requests from patients. For each request, the date, time, and status (Pending Approval) are shown. Doctors have the option to either approve or cancel these requests:

If **approved,** the appointment is moved to the Confirmed Appointment List.

If **canceled,** the request is removed from the list.

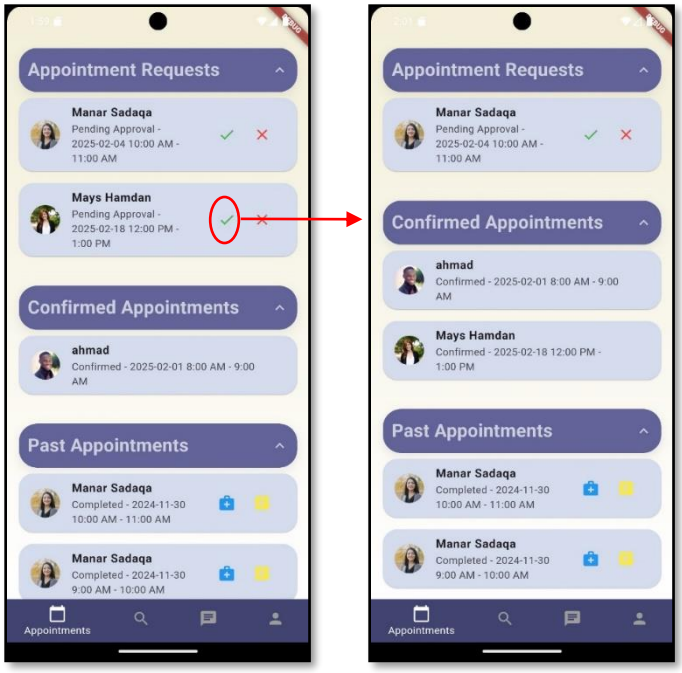


Figure 54 appointment request list 1

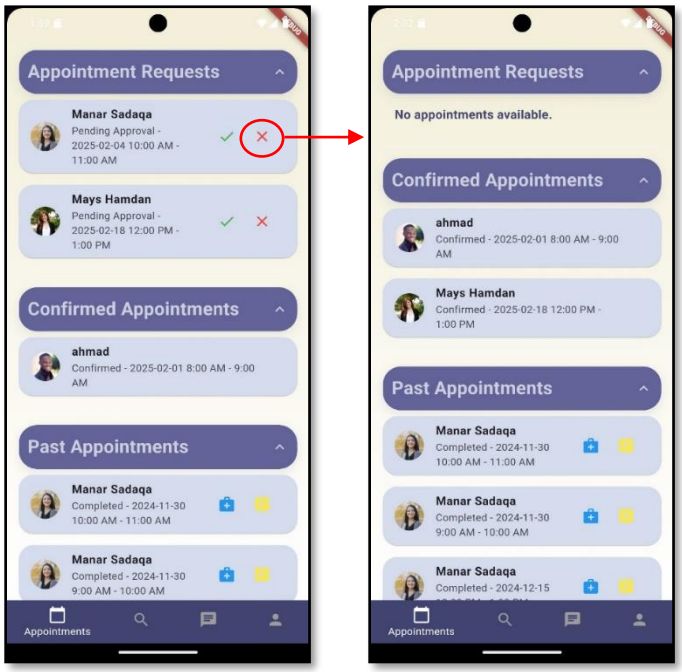


Figure 55 appointment request list 2

➢ Confirmed Appointment List

This section displays appointments that the doctor has approved but are yet to occur. Each appointment shows the date, time, and status (Confirmed).

Figure 56 confirmed appointment list

➢ Past Appointments

This section lists completed appointments between the doctor and their patients. Each entry shows the date, time, and status (Completed).

Doctors **can provide additional patient care by using the Prescription and EHR icons** associated with each past appointment. However, the doctor can write only one prescription and one medical report (EHR) per completed appointment to ensure accuracy and clarity in patient records.

- **Prescription Icon:** Opens the **Prescription Form,** which allows the doctor to write a prescription for the patient.

In the Prescription Form The form **automatically** populates Doctor Information and Patient Information from the appointment ID. Doctors can specify medications, quantities, and dosages. If additional medications are needed, they

can click **Add Medication.** Once the form is complete, clicking **Submit Prescription saves** the prescription and sends it to the patient.

Add medication in prescription:

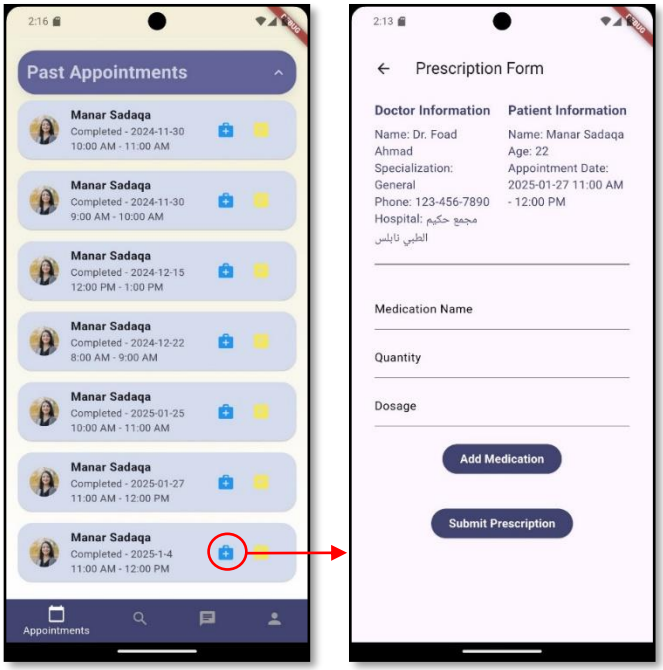


Figure 57 past appointment list & prescription form

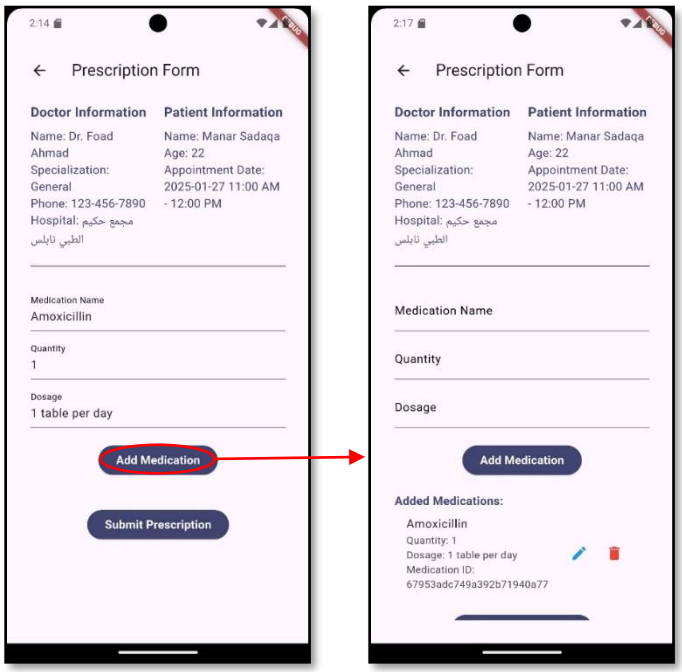


Figure 58 prescription form 2_add medication

Edit medication from prescription:

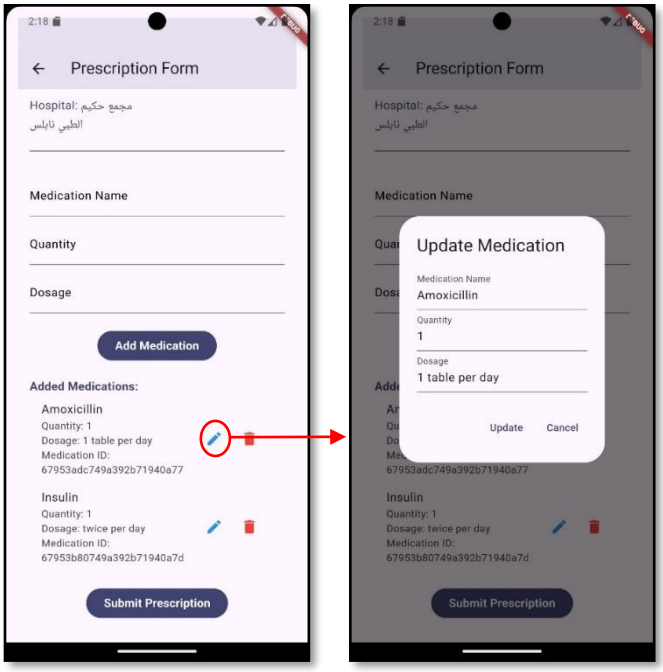


Figure 59 prescription form _ edit medication 1

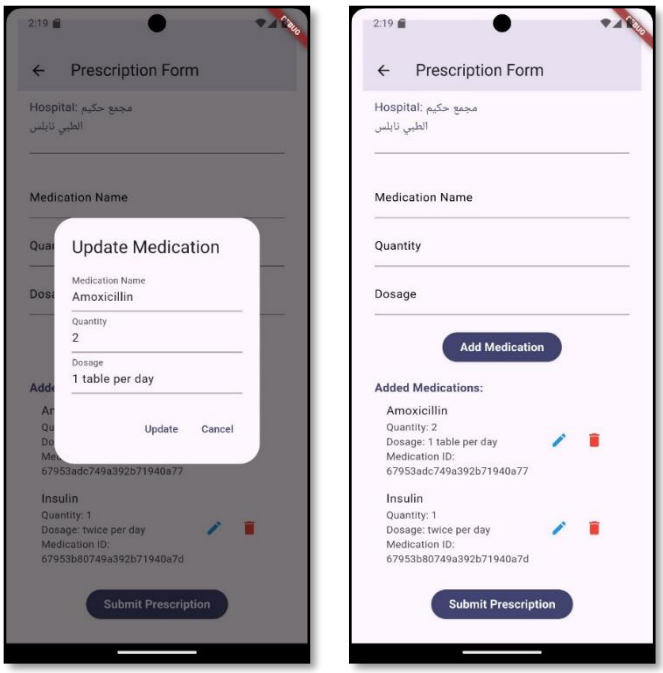


Figure 60 prescription form_ edit medication 2

Delete medication from prescription:

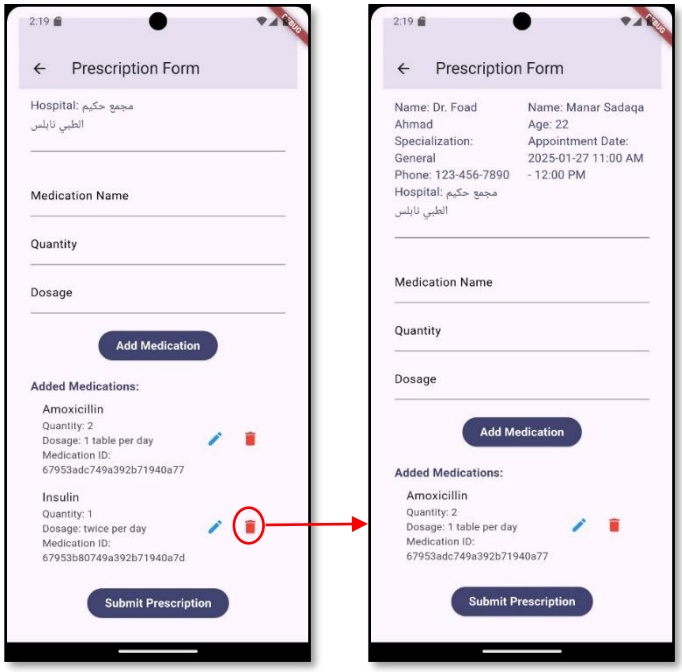


Figure 61 prescription form _ delete medication

Submit prescription:

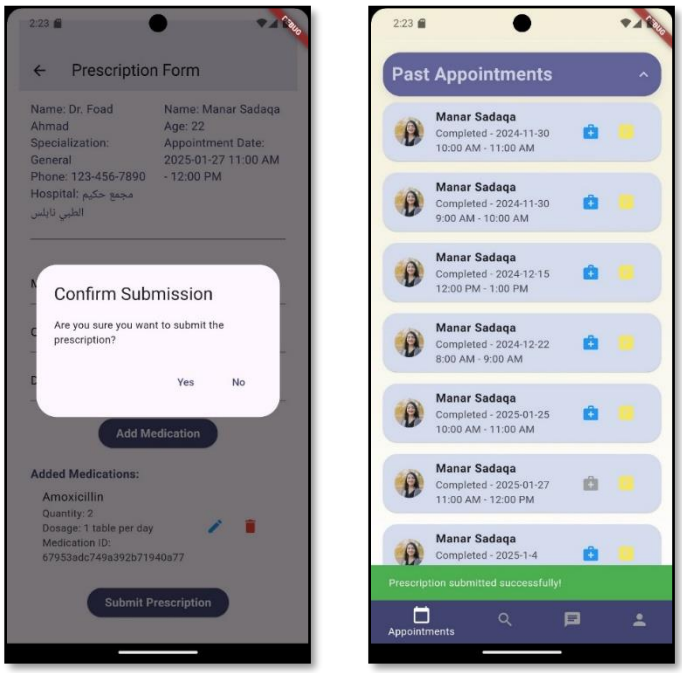


Figure 62 prescription form _submit prescription

- **EHR Icon:** Opens the **Report Form,**

In the report form, the doctor can write a detailed medical report for the patient. The form **pre-fills** Doctor Information and Patient Information based on the appointment ID. The doctor can document: Medical History, Allergies, and Examination Results

At the bottom of the form, the **doctor's seal is automatically displayed.** Upon completing the report, clicking **Submit Report** saves it and sends it to the patient.

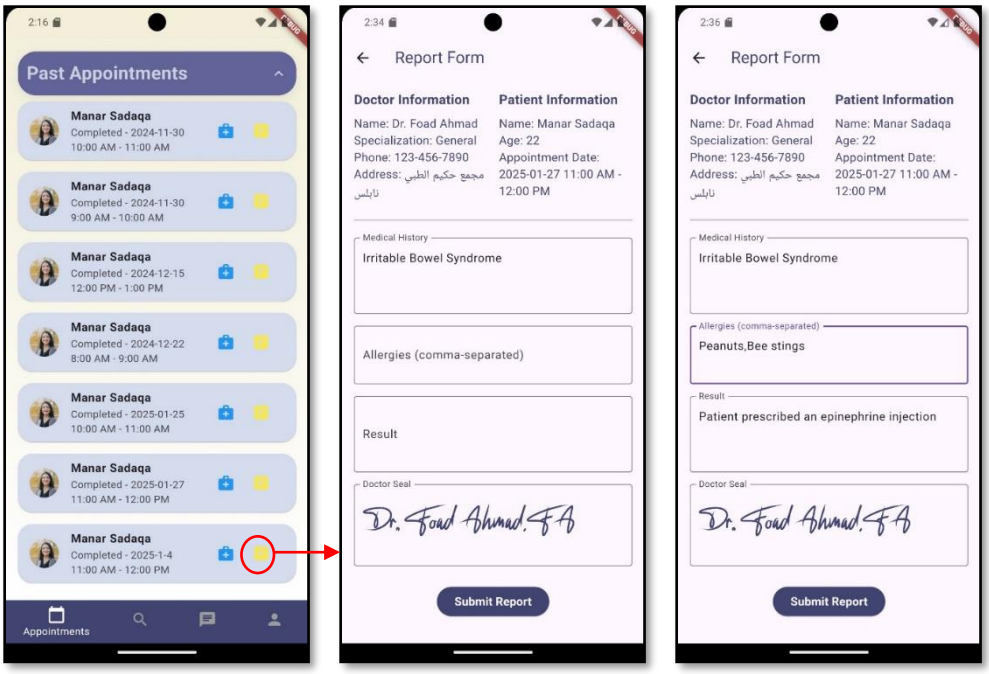


Figure 63 past appointment list & report form (EHR)

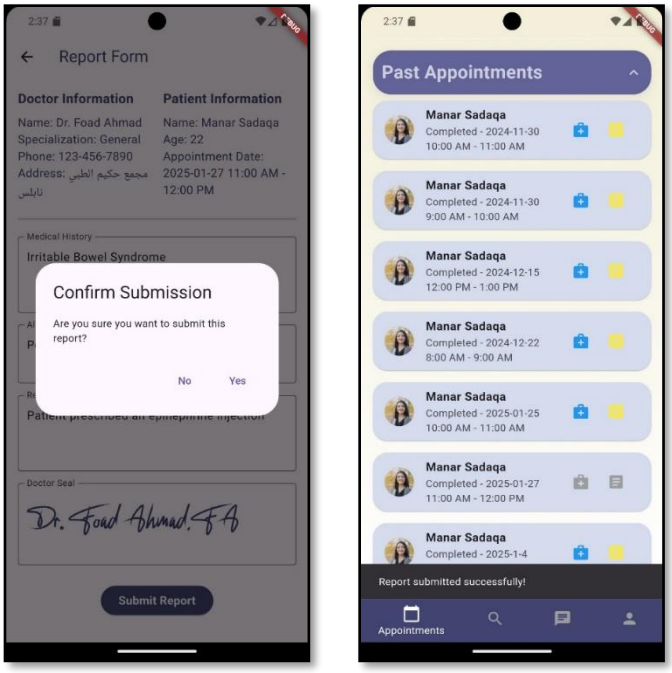


Figure 64 report form _submit report

2. Search EHR Records Screen

This screen allows doctors to efficiently search for EHR (Electronic Health Records) by specifying the search criteria. The available search options include:

Patient Name: Displays all medical reports associated with the selected patient.

Doctor Name: Shows all reports written by the specified doctor for various patients.

Appointment Date: Lists all reports corresponding to appointments that occurred on the selected date.

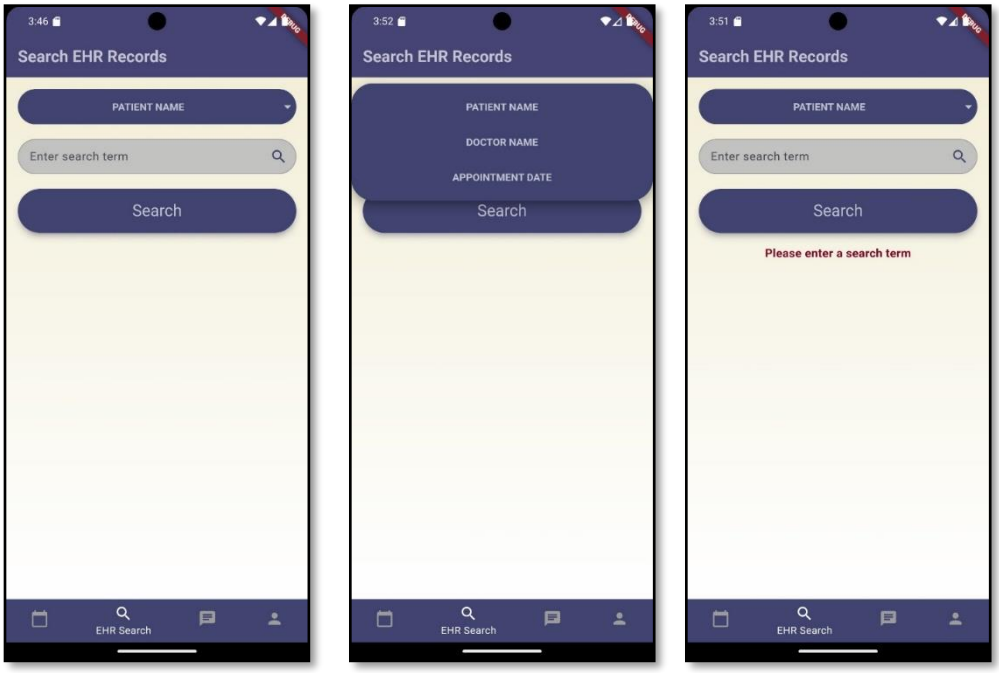


Figure 65 doctor search screen 1

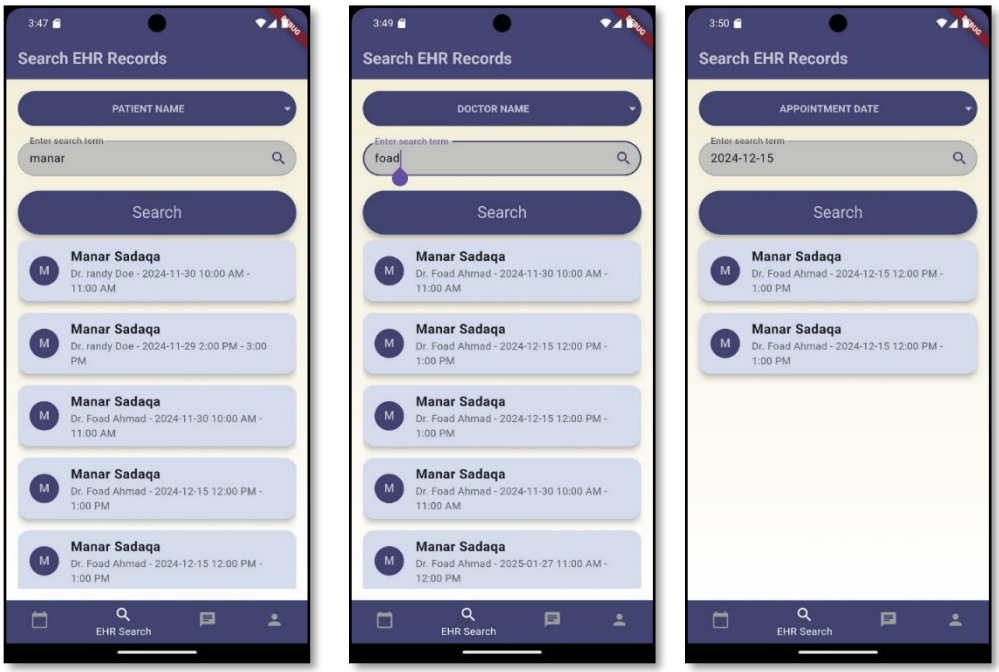


Figure 66 doctor search screen 2

Figure 67 EHR page

3. Chat Screen

The Chat Screen provides a convenient way for doctors to communicate with both patients and other doctors. **The screen displays two separate lists:** one for patients and another for doctors.

At the top of the screen, there is a **search bar** that facilitates finding a specific patient or doctor for quick interaction.

By clicking on a patient's or doctor's name, the user is redirected to a **chat page** where messages are displayed.

This chat page enables seamless communication, allowing the exchange of **text messages and images.**

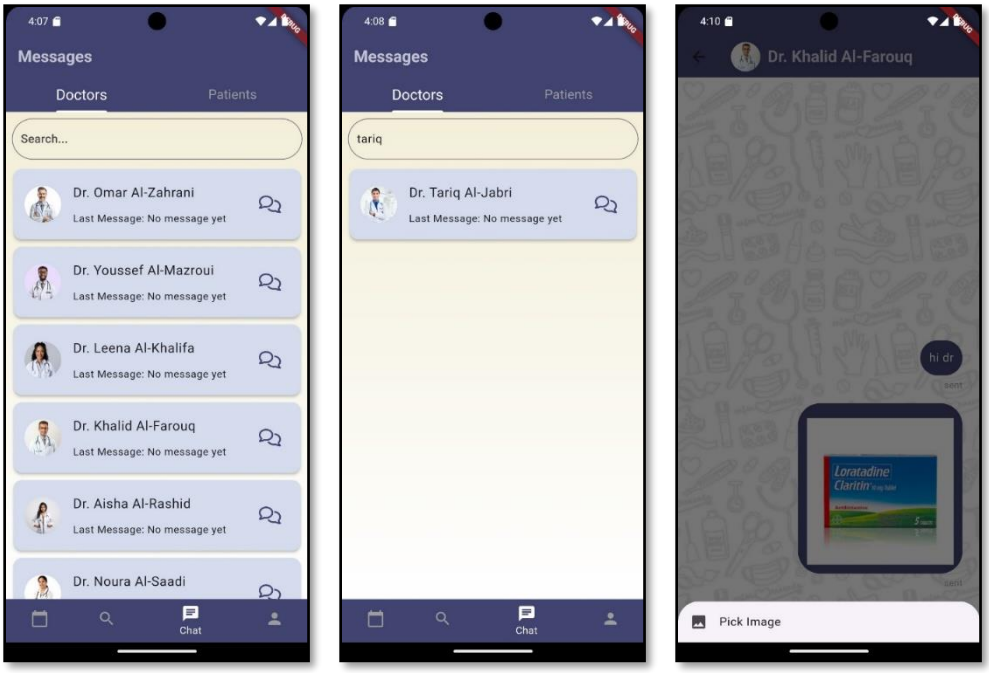


Figure 68 doctor chat screen 1

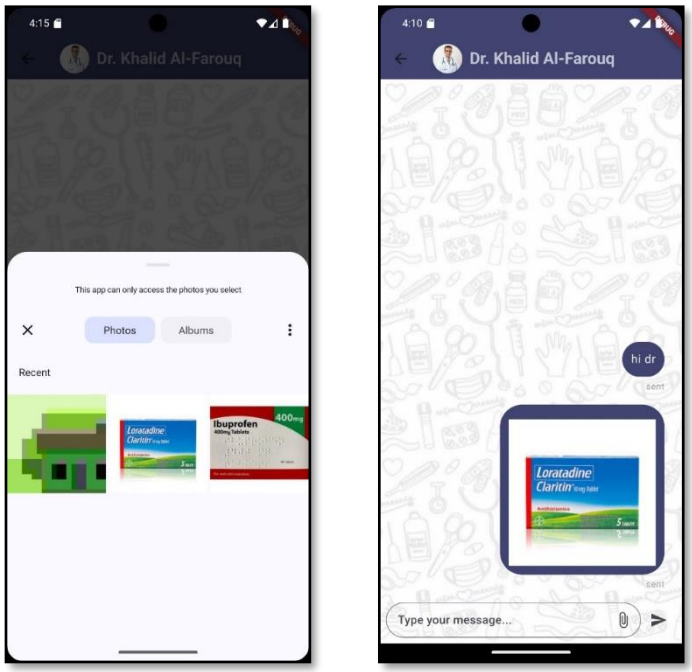


Figure 69 doctor chat screen 2

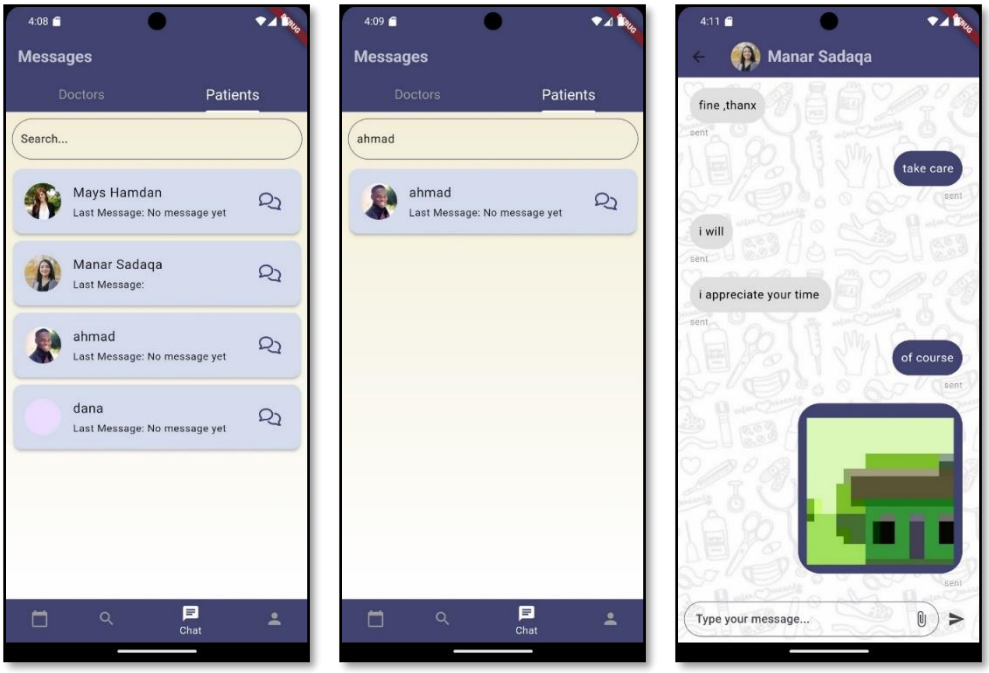


Figure 70 doctor chat screen 3

4. Profile Screen

The profile screen displays the doctor's personal information and allows them to update or edit it except email. Editable fields include:

Profile photo, Doctor's name, Username, Specialty, Phone number, Address, Hospital, Price per booking, Years of experience. . (Email cannot be changed)

After making changes, the patient can save the updates by clicking on the **Update Profile button.**

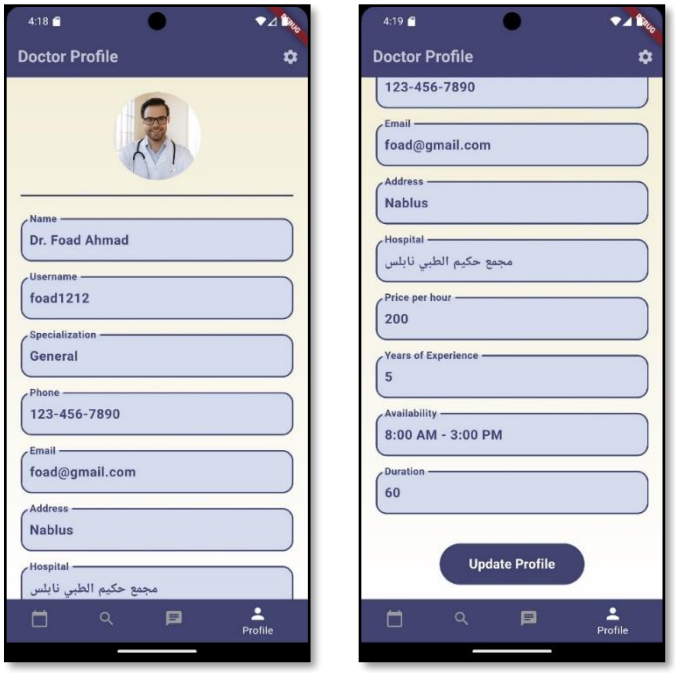


Figure 71 doctor profile screen 1

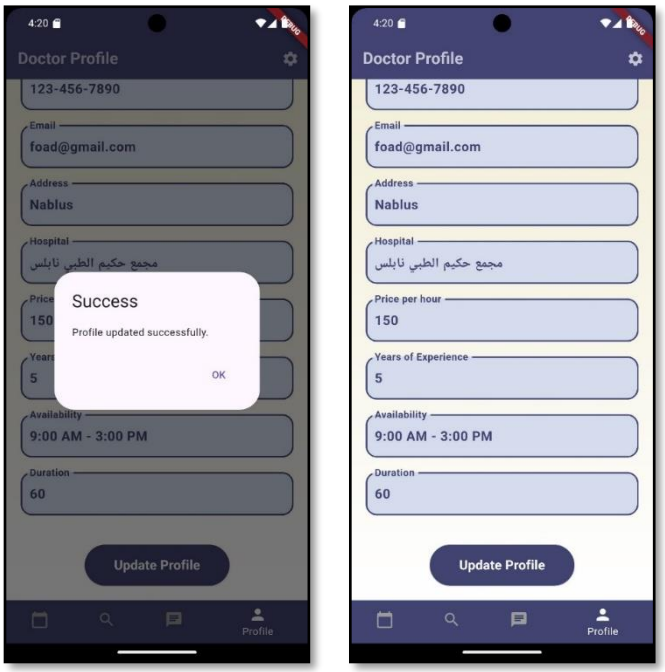


Figure 72 doctor profile screen 2

Settings Icon

Located at the top corner of the screen, the Settings Icon leads to the Settings Page, which includes the following options:

- **Dark Mode:**

Toggle to enable/disable the dark mode, changing the app's theme to a darker color scheme.

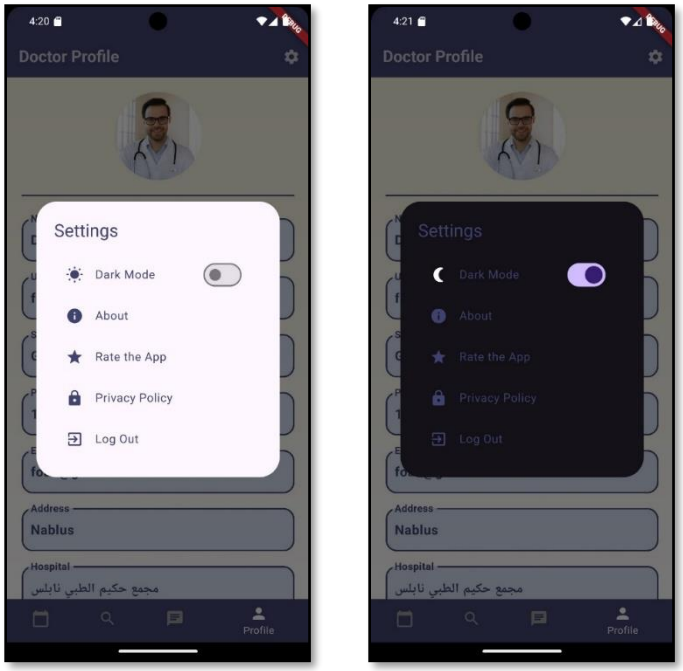


Figure 73 setting_ dark mode

- **About:**

Displays detailed information about the app.

Includes a View Licenses option, which shows a list of licenses used in the application.

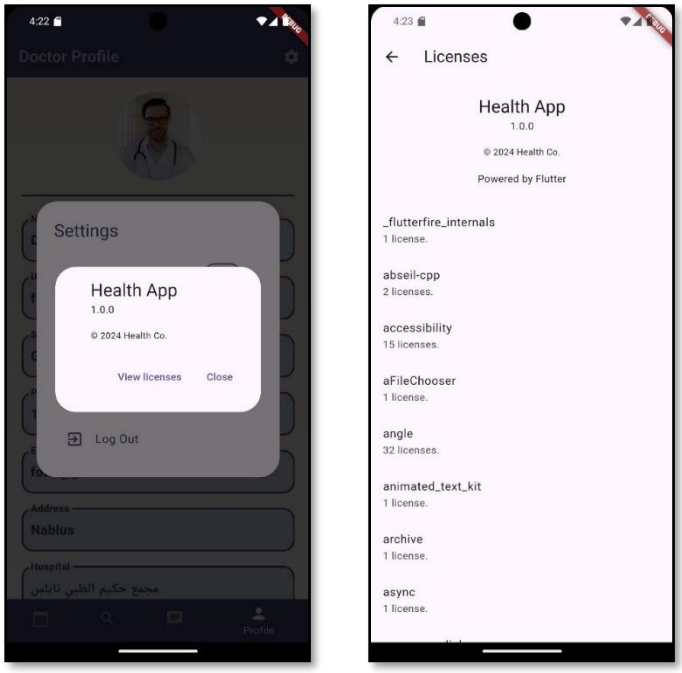


Figure 74 setting_ about

- **Rate the App:**

Allows the patient to rate the app on a scale of 1 to 5 stars.

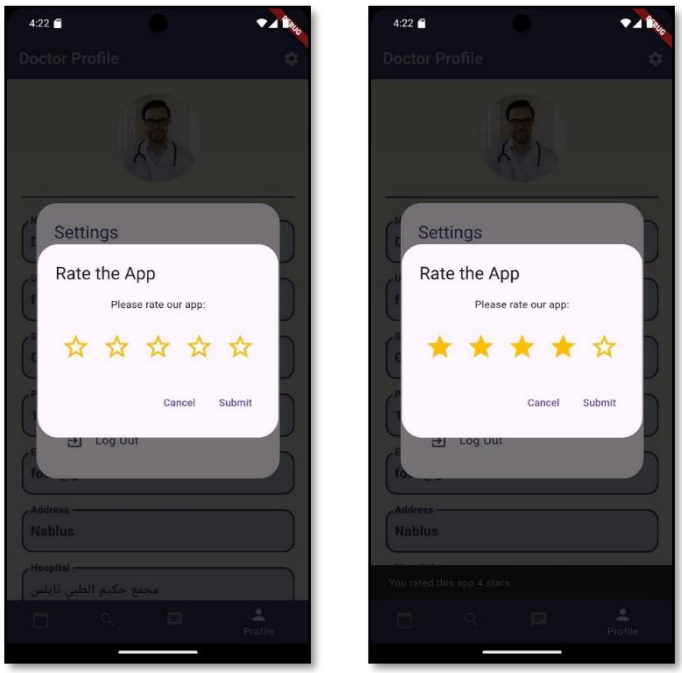


Figure 75 setting_ rate the app

- **Privacy Policy:**

  Provides access to the app's privacy policy.

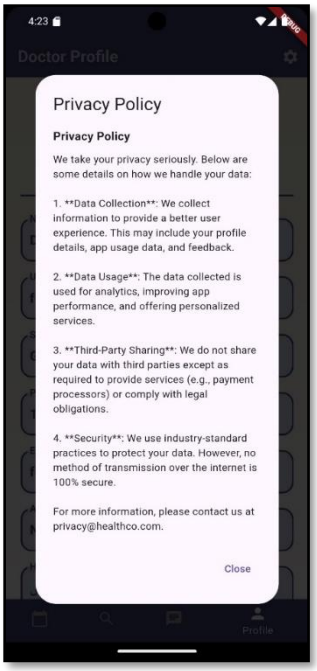


Figure 76 setting_ Privacy Policy

- **Log Out:**

Logs the patient out of the application and redirects them to the Login Screen.

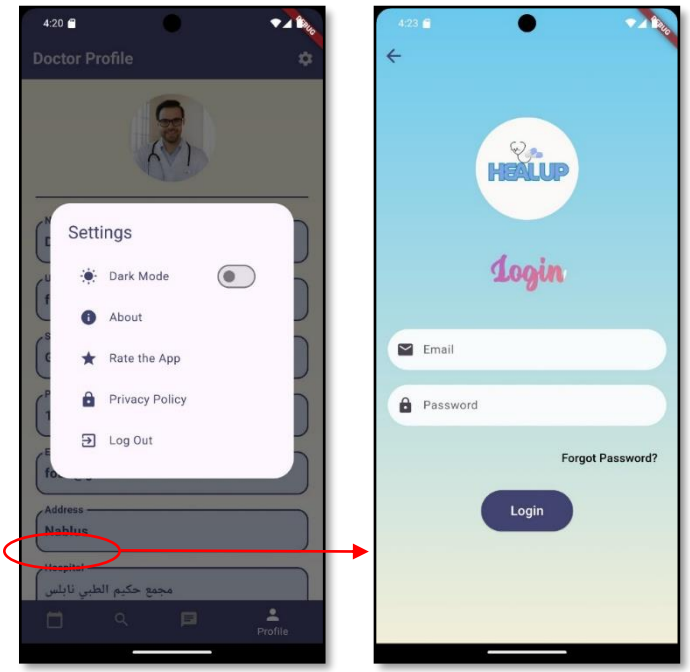


Figure 77 setting_ logout

4.2.1.4 Management login process:

The Login screen for the application

allows management to enter their email, and pass-word.

Error messages are displayed in real-time for invalid login attempts,

If the password or email entered is incorrect, the login attempt will fail. Offering clear guidance on resolving issues.

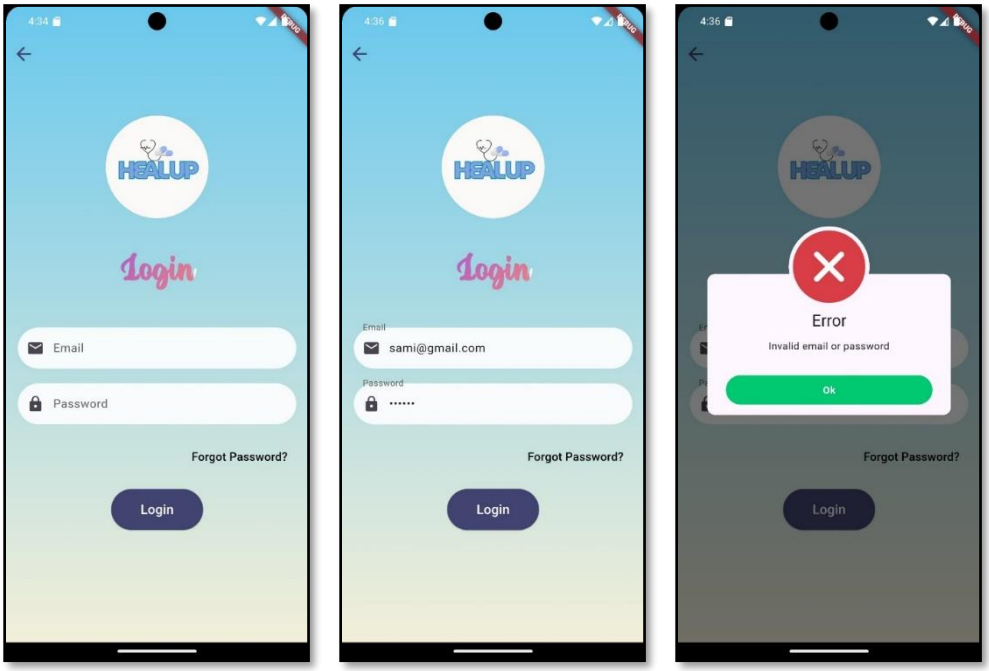


Figure 78 management login

Home Page Navigation for managements:

Allows the management to easily navigate between different pages via the bottom navigation bar. Available pages include:

(Patient List screen, Doctor List screen, Medication List screen, Order List screen, Management List screen)

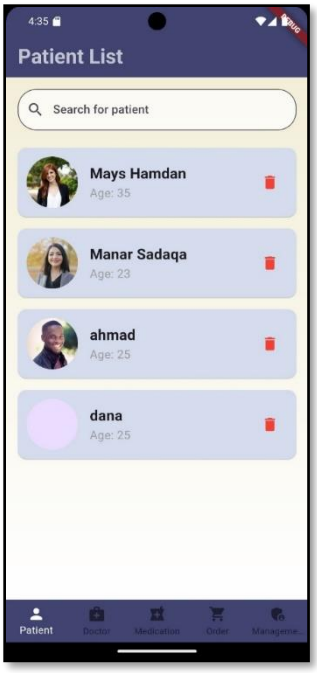


Figure 79 management home screen

1. Patient List Screen

The Patient List Screen displays a comprehensive list of patients, showcasing their name, photo, and age. A **search bar** at the top allows managements to quickly find a specific patient.

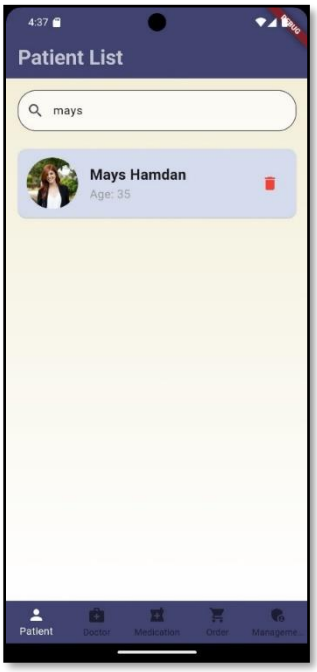


Figure 80 patient list

Each patient entry includes a **delete icon** to remove the patient from the list if necessary.

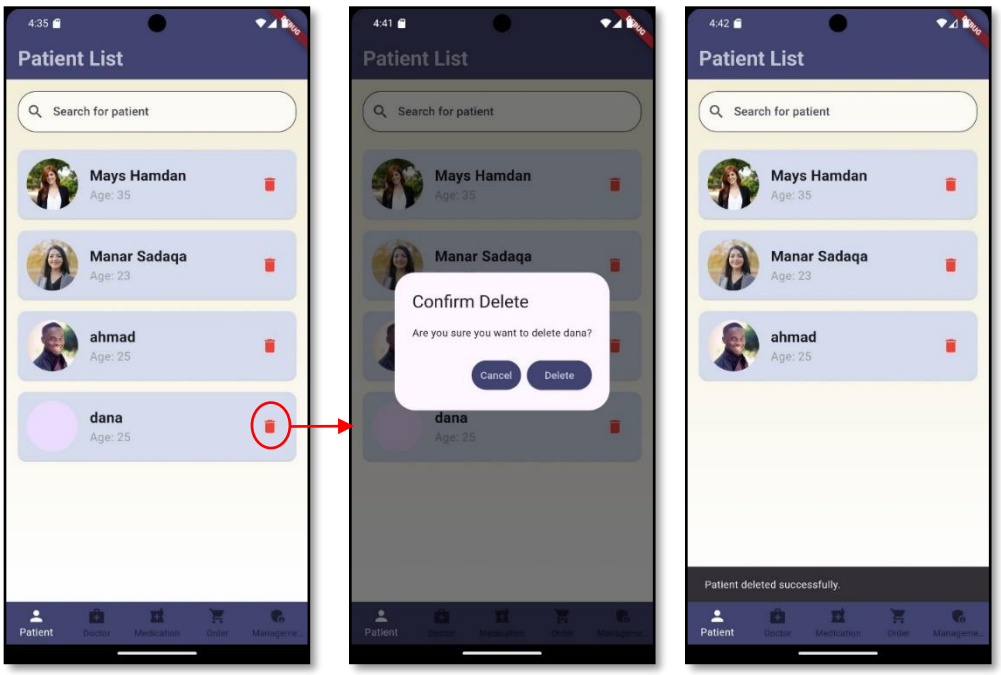


Figure 81 patient list 2 & delete patient

Clicking on a patient's name redirects the user to the **Patient Details Page**, where the patient's complete information is displayed. This includes:

Photo, Name, Email, Gender, Date of Birth, Phone Number, Address, Medical History.

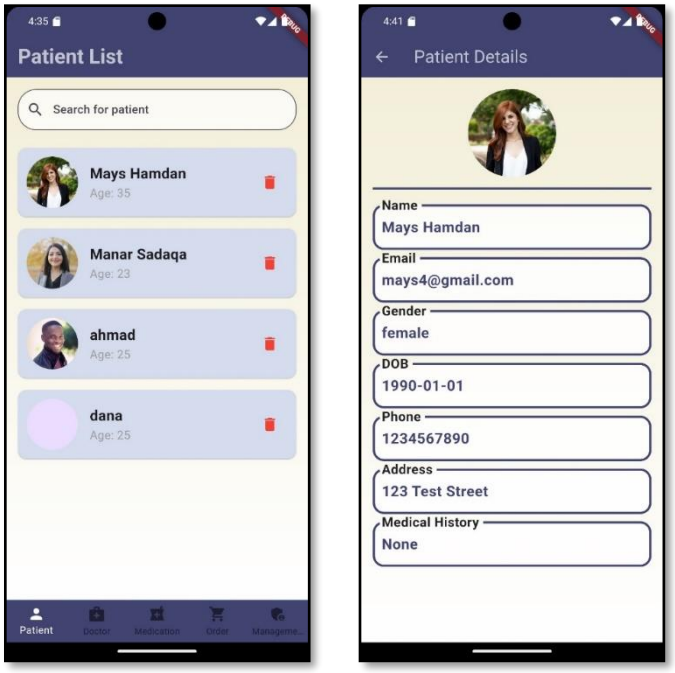


Figure 82 patient list 3 & patient details page

2. Doctors List Screen

The Doctors List screen provides a complete list of doctors, displaying their photos, name, specialty, and rating. The screen includes several main functions:

Search bar: Allows users to search for doctors by name for quick access.

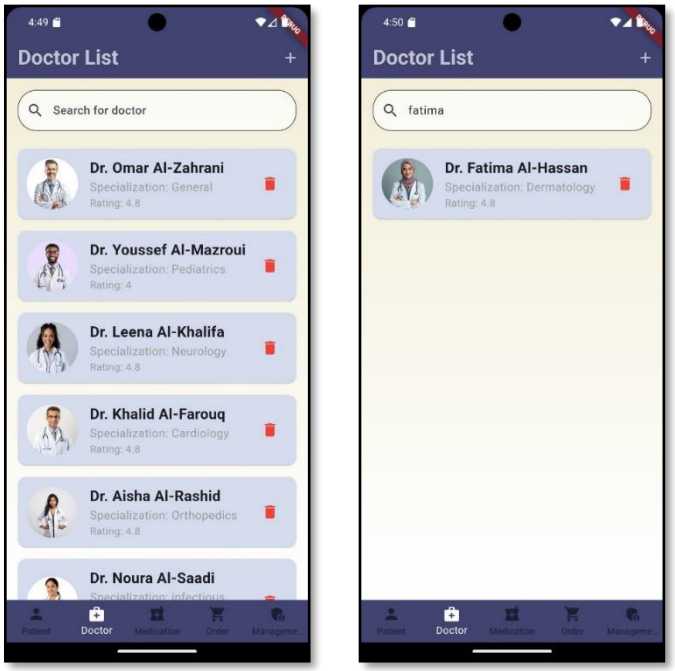


Figure 83 doctor list

Delete icon: Allows you to remove a doctor from the list.

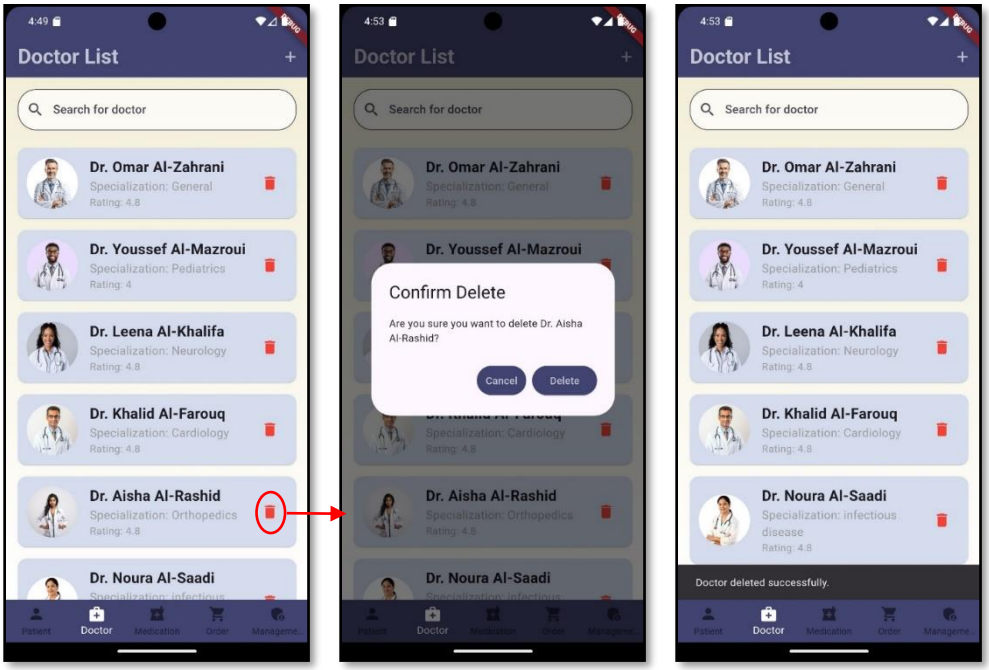


Figure 84 doctor list 2 & delete doctor

Add icon: Located at the top of the screen, it allows users to add a new doctor.

Clicking on the add icon redirects you to the **Add New Doctor page,** where you can enter the following details:

Name, username, password, specialty, phone number, email, address, affiliated hospital, availability time, years of experience, price per hour, seal.

After filling in the details and clicking on **Add Doctor**, the new doctor is added to the list.

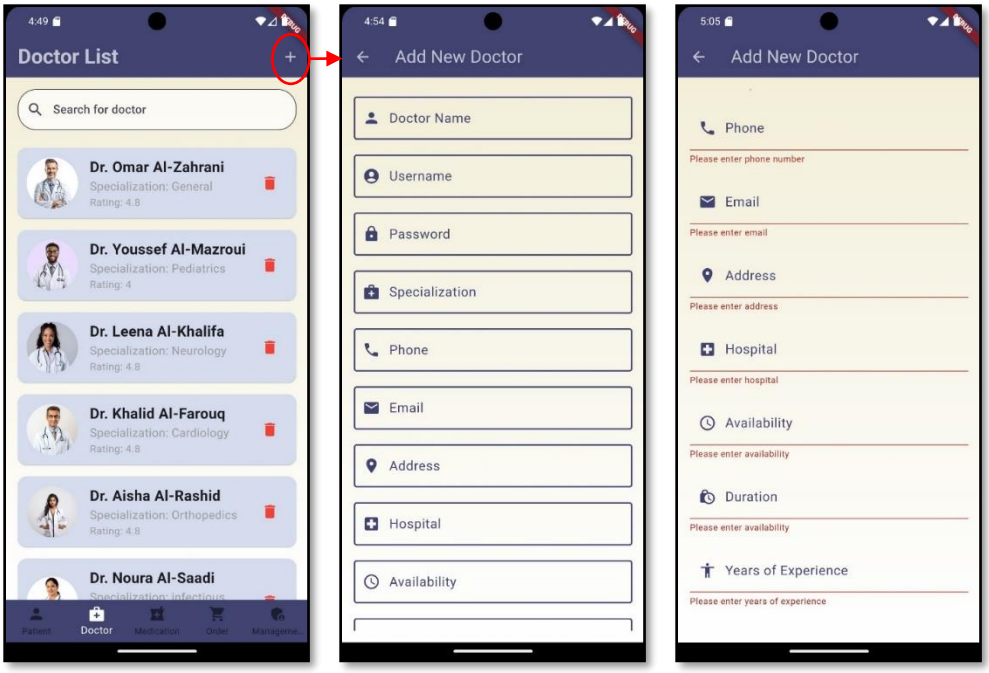


Figure 85 add doctor page

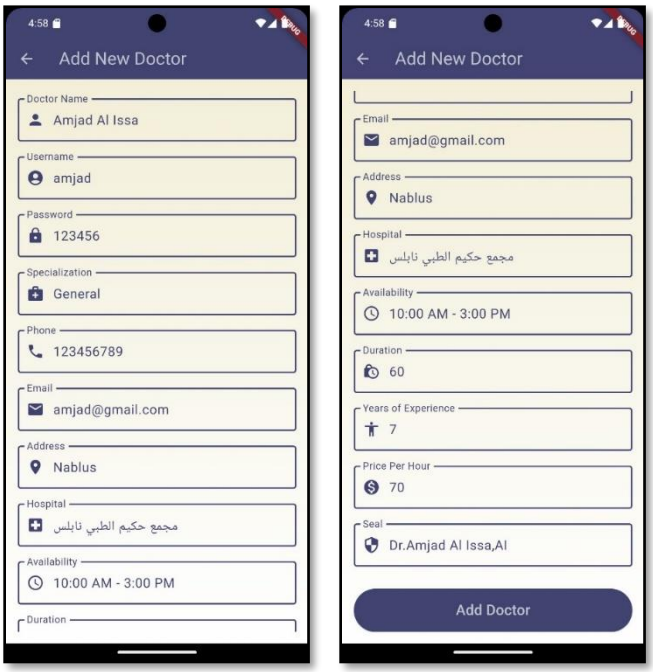


Figure 86 add doctor page 2

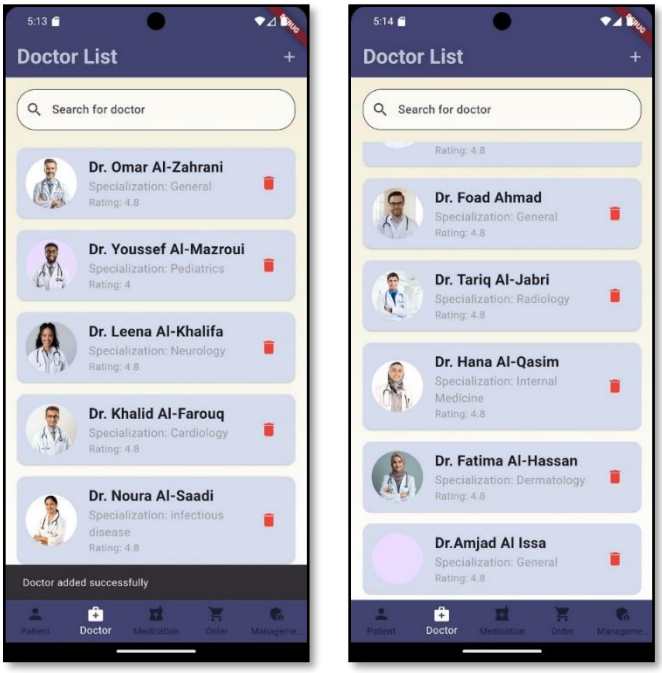


Figure 87 add doctor page 3

Clicking on a doctor's name takes you to the **doctor's details page**, which displays:

Photo, name, username, email, specialty, phone number, address, hospital, years of experience , Price per hour, availability, rating, reviews, seal .

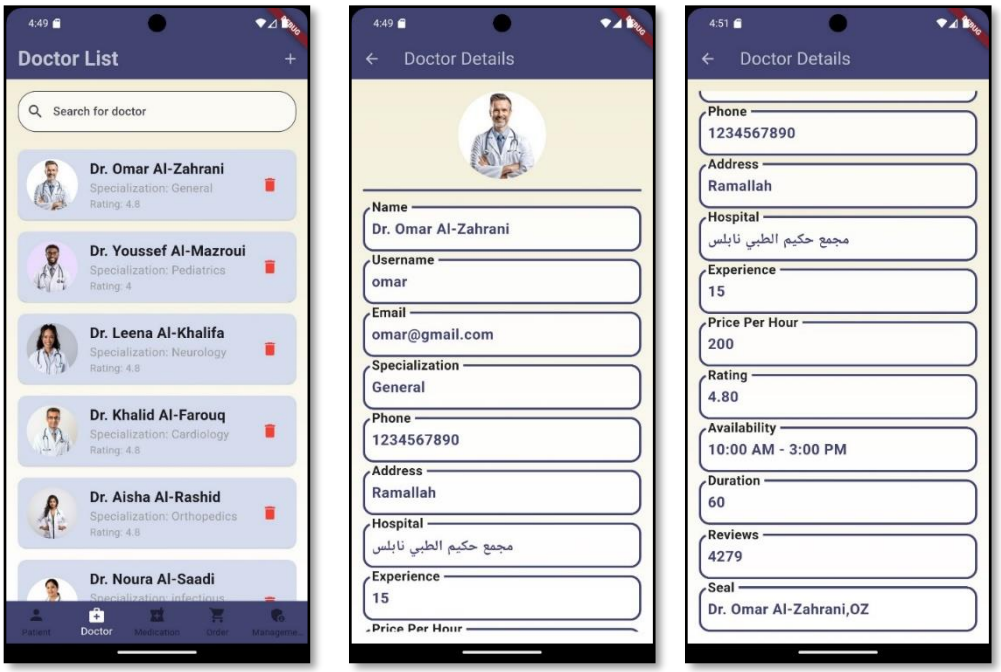


Figure 88 doctor list 3 & doctor details page

3. Medication List Screen

The Medication List Screen allows users to efficiently manage and organize medications. Medications are categorized into three sections:

- All: Displays all available medications.
- OTC Medication: Organizes medications by type, with each type containing its associated medications.
- Discount List: Highlights medications that are currently on discount.

Medication Display: Each medication entry includes: Image, Name, Scientific Name.

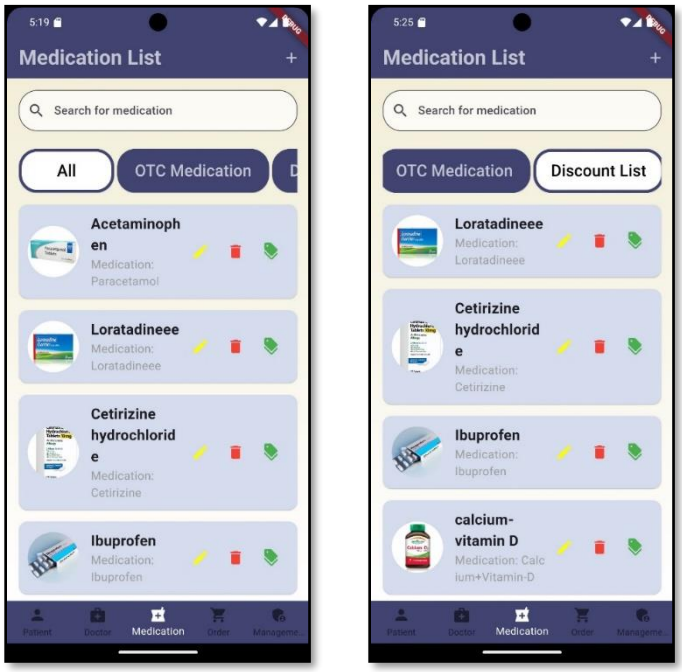


Figure 89 all medication list & discount medication list

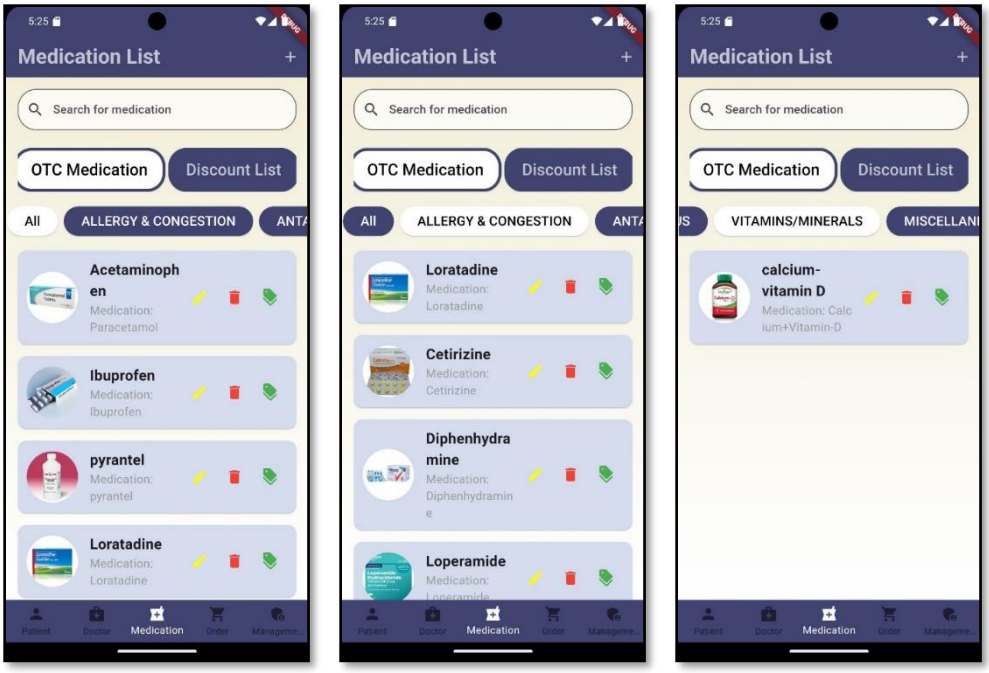


Figure 90 OTC medication list

Key Features:

Search Bar: Positioned at the top of the screen, enabling users to search for medications by name.

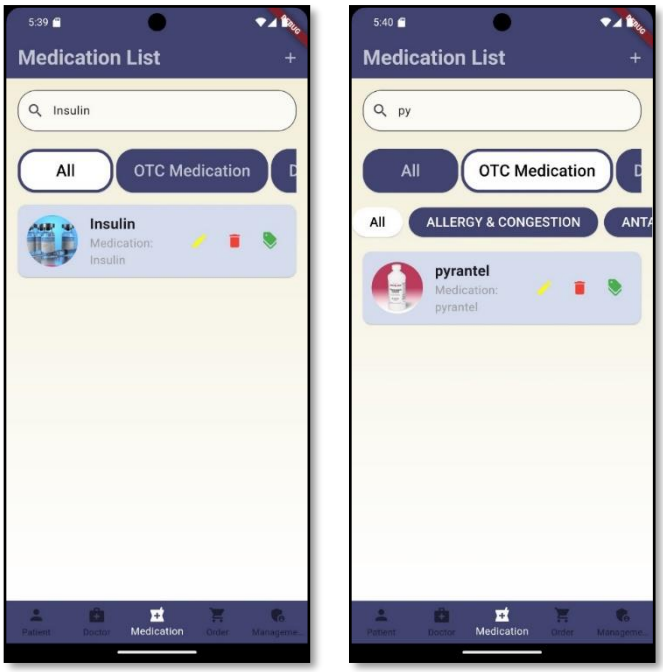


Figure 91 medication list & search tap

Icons for Edit, Delete, and Discount.

Actions for Each Medication:

- **Edit:**

Go to the Edit Medication Page, where managements can update medication details, including:

Name, Scientific Name, Stock Quantity, Expiration Date, Description, Type, Price

Upon clicking **Update Medication**, the changes are saved.

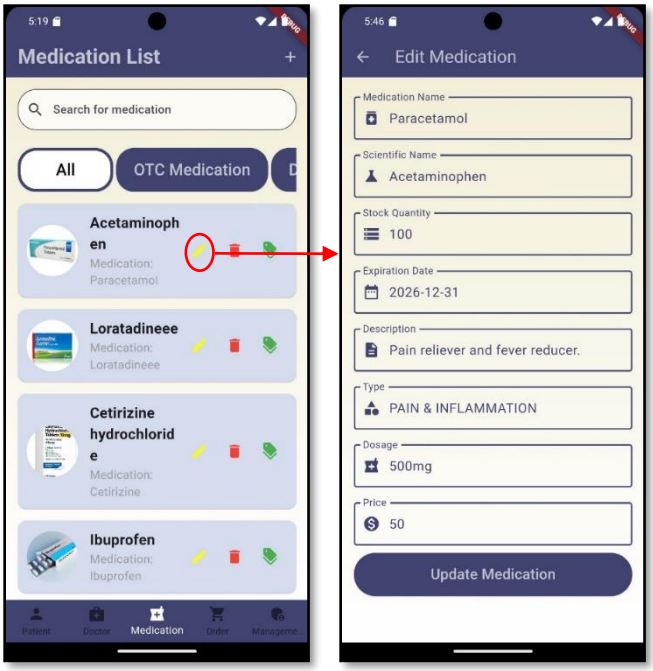


Figure 92 medication list 2 & edit medication

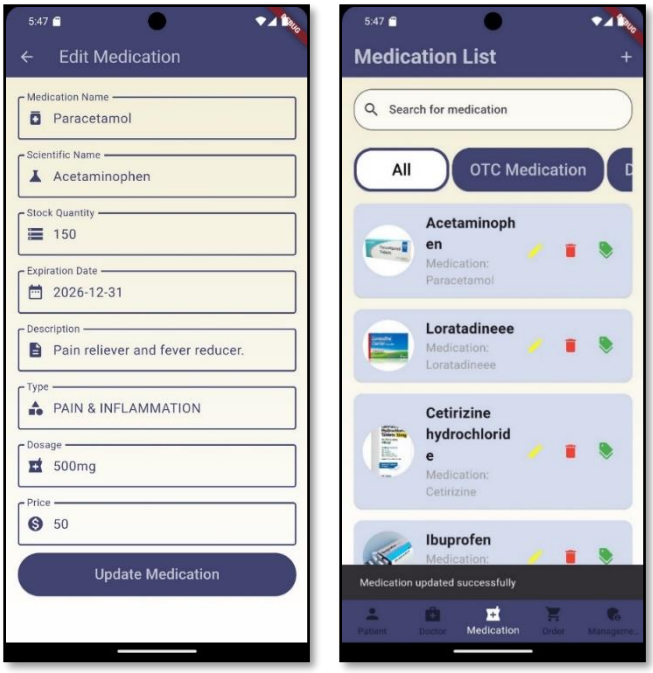


Figure 93 edit medication 2

- **Delete:**

Removes the selected medication from the list.

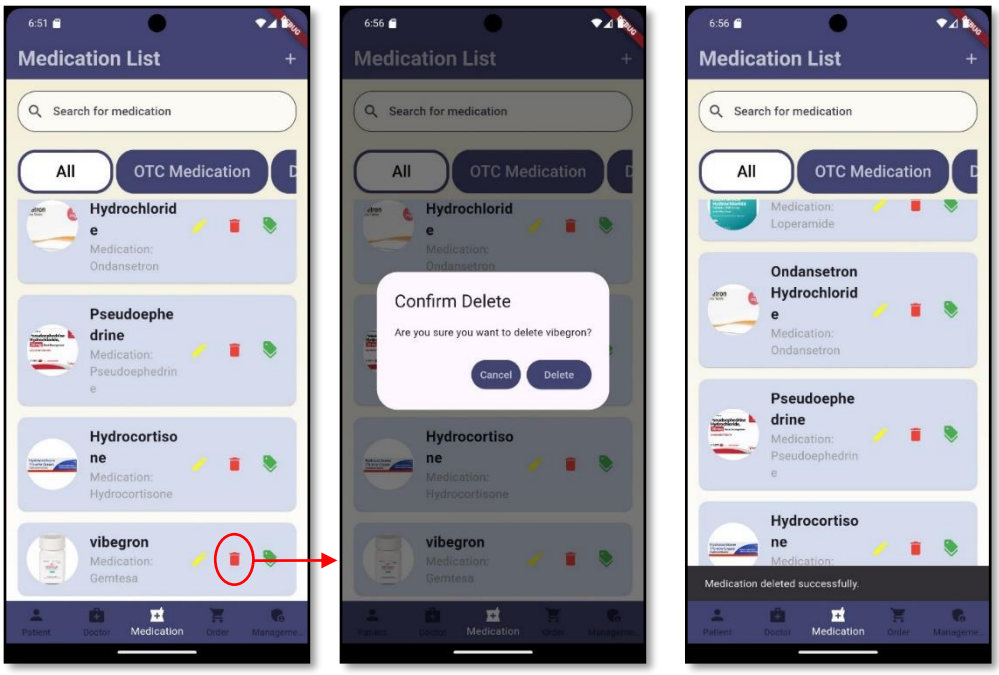


Figure 94 medication list 3 & delete medication

- **Discount:**

Allows managements to add or update the discount percentage for the medication.

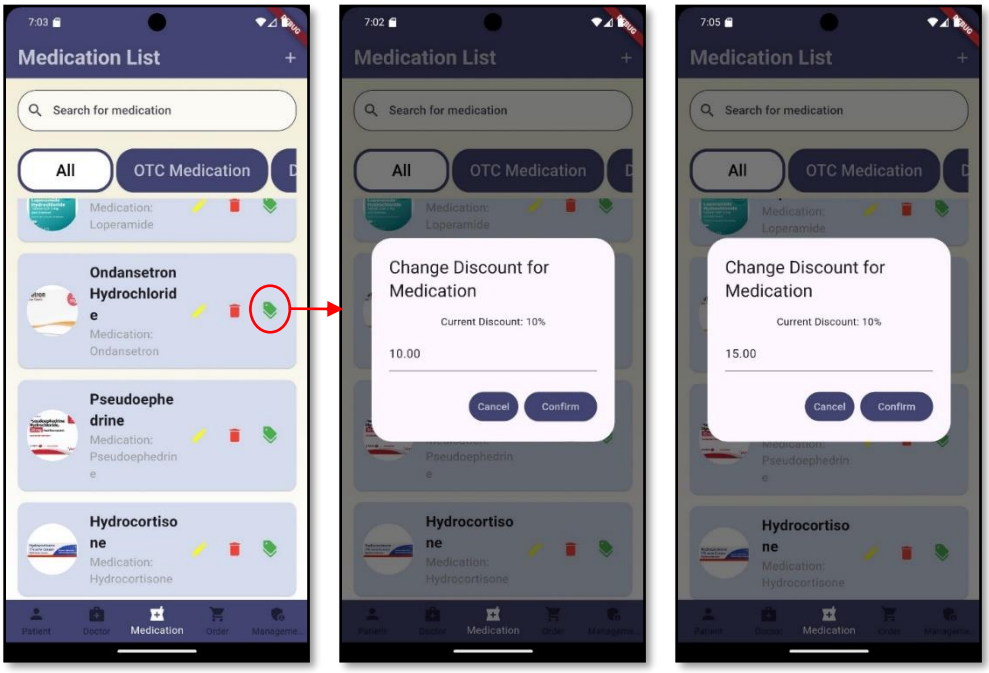


Figure 95 medication list 4 & change discount medication

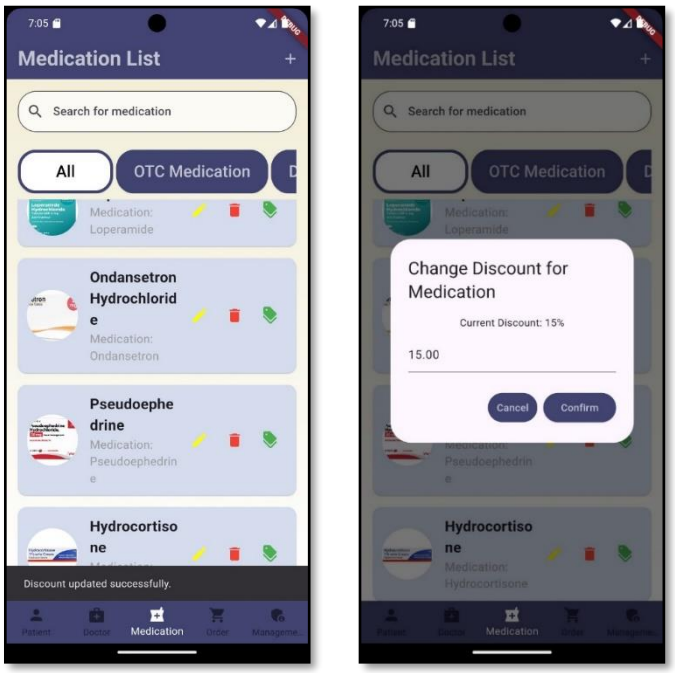


Figure 96 change discount medication 2

Adding a New Medication:

Add Icon in the top bar redirects to the **Add New Medication Page,** where users can input details such as:

Image (upload able from the device), Name, Scientific Name, Stock Quantity, Expiration Date, Description, Type, Discount Percentage (if applicable)

Clicking **Add Medication** saves the new entry.

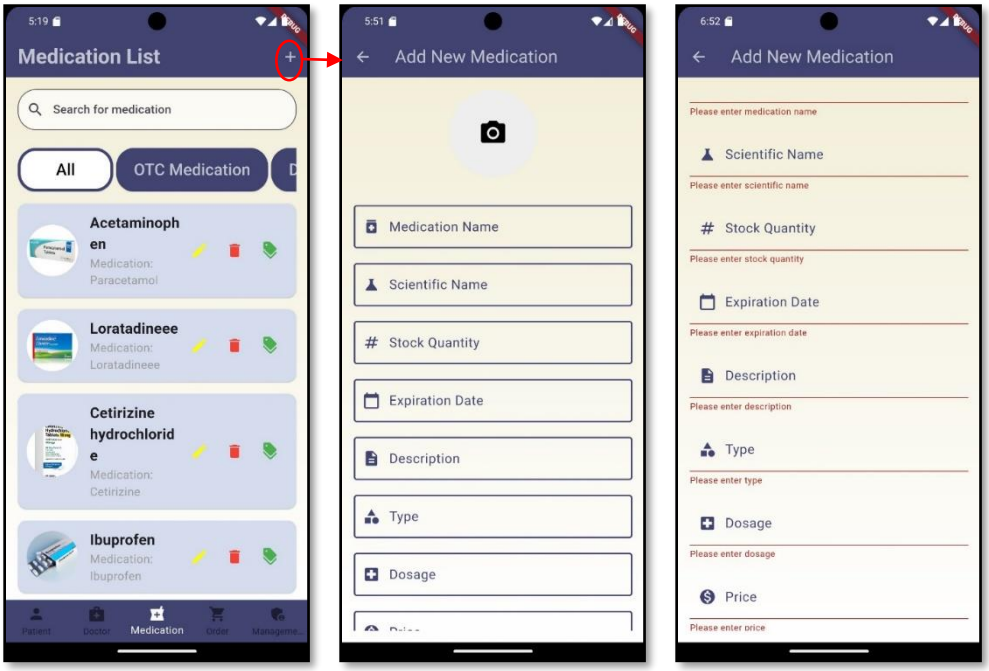


Figure 97 add medication page

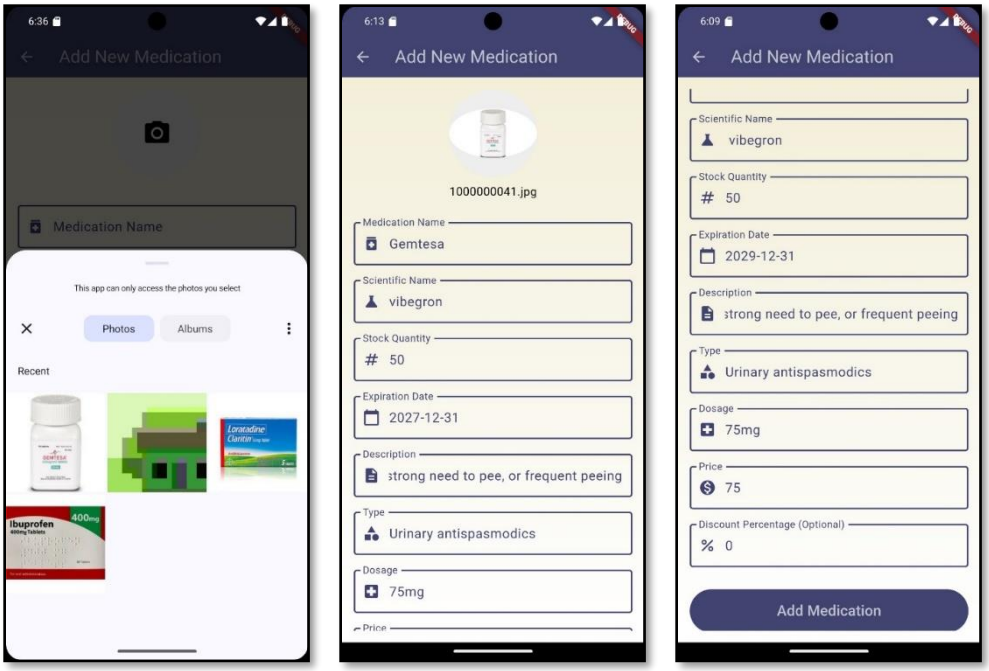


Figure 98 add medication page 2

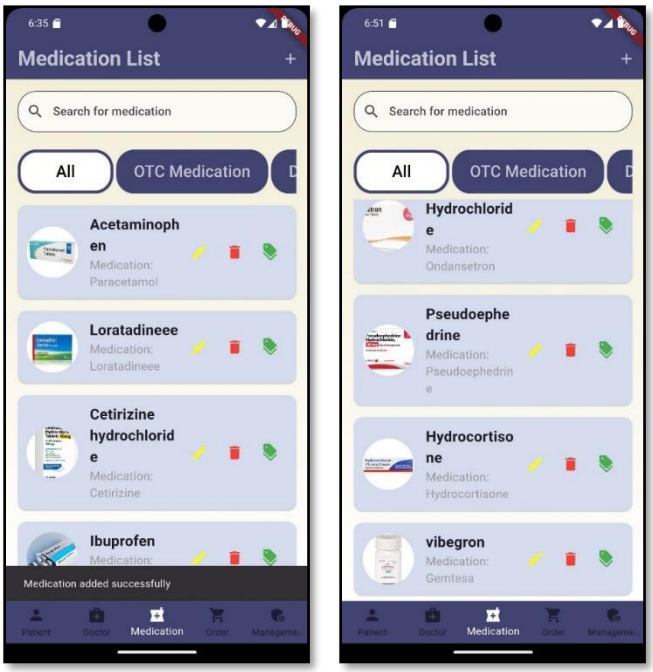


Figure 99 add medication list 3

Viewing Medication Details:

Clicking on a medication redirects to the **Medication Details Page**, which displays:

Image, Name ,Scientific Name ,Stock Quantity ,Expiration Date ,Description , Type , dosage, Price.

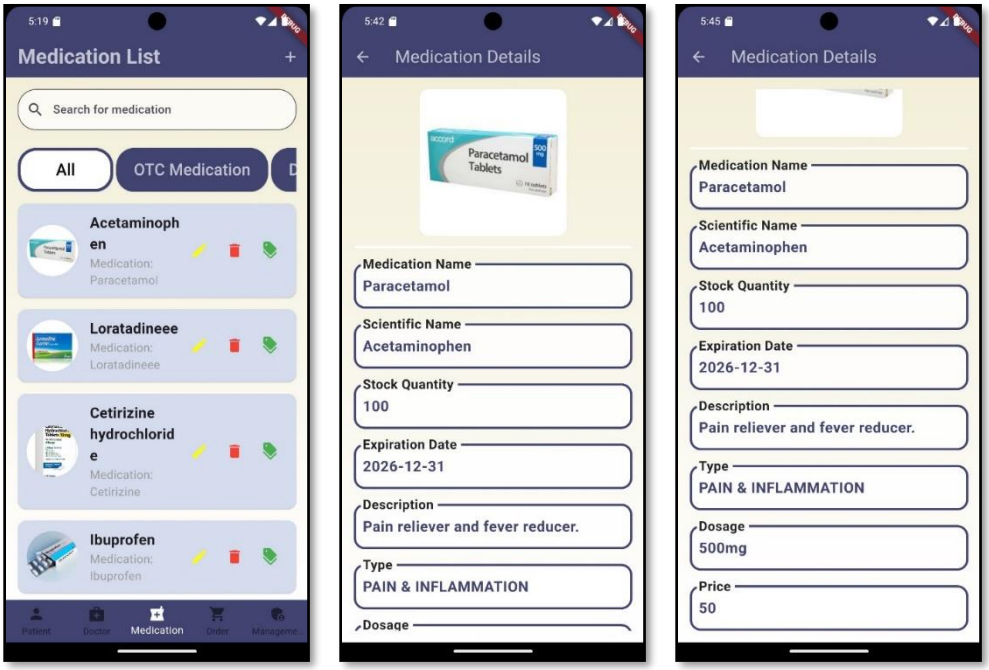


Figure 100 medication list & medication details page

This screen ensures streamlined management of medications, making it easy to categorize, update, and view details while maintaining organization and accessibility.

4. Order list screen:

The Order List Screen displays all patient orders with a search bar at the top, allowing users to search for specific orders by patient name. Each order is presented with its order ID, patient name, and order date.

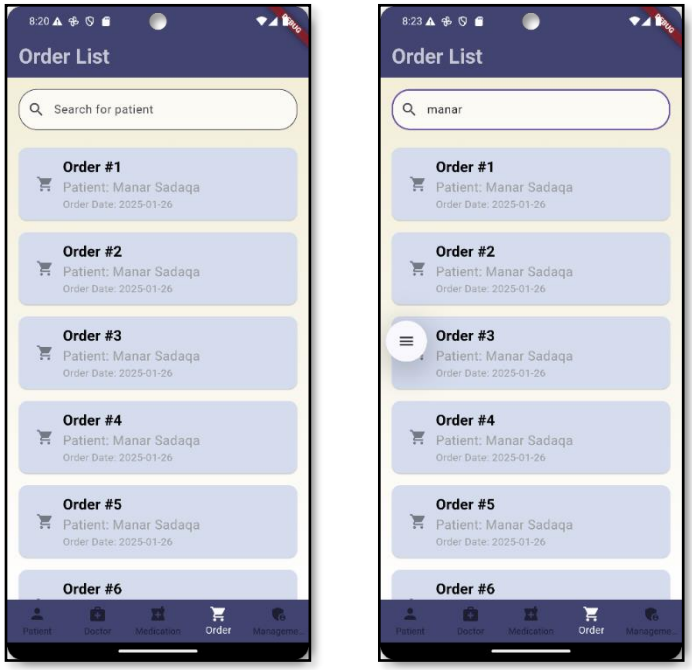


Figure 101 order list & search tab

By selecting an order, users are directed to the **Order Details Page**, which provides the following information:

- Order Details: Order ID ,Patient Name ,Order Date ,Medication List(medication name with quantity)
- Payment Details: Payment ID , Amount , Payment Method (cash or card) , Payment Status (e.g., completed or pending) ,Currency
- Billing Details: Billing ID ,Payment Status (completed or pending)

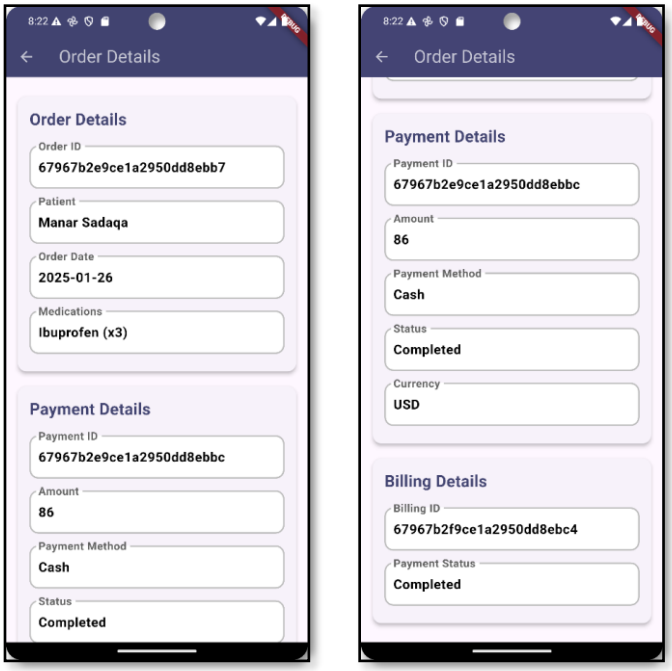


Figure 102 order details page

5. Management list screen

The Management List Screen displays a list of management team members, showing their names and gender. A **search bar** is available at the top to quickly find specific members.

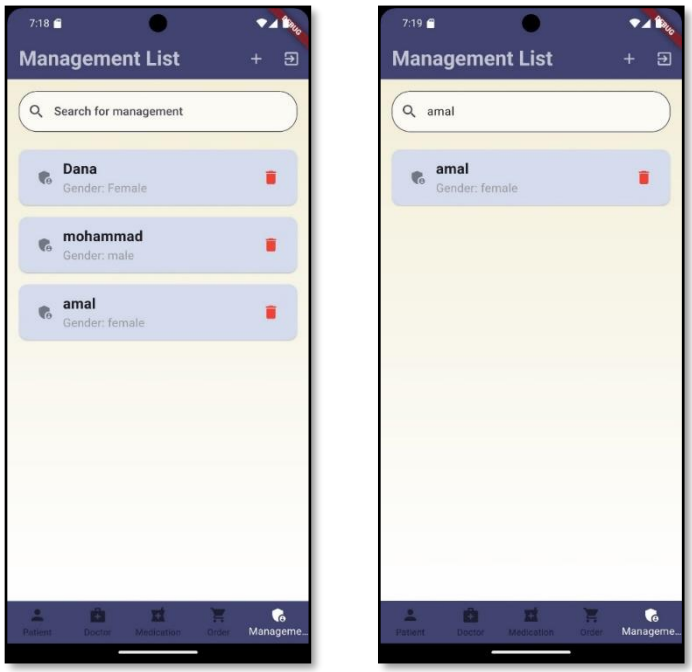


Figure 103 management list & search tap

At the top of the screen, there are two icons:

-Add Icon: Navigates to the **Add New Management Page**, where users can input details such as

The name, gender, phone number, address, email, and password. By pressing the **Add Management** button, the new member is added to the list.

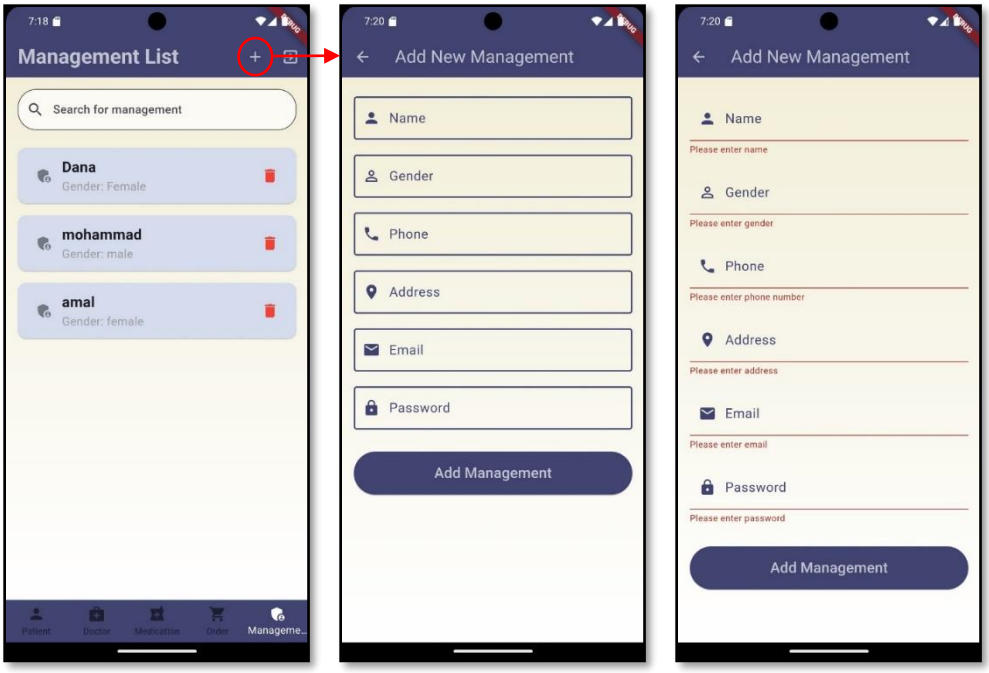


Figure 104 management list & add management page

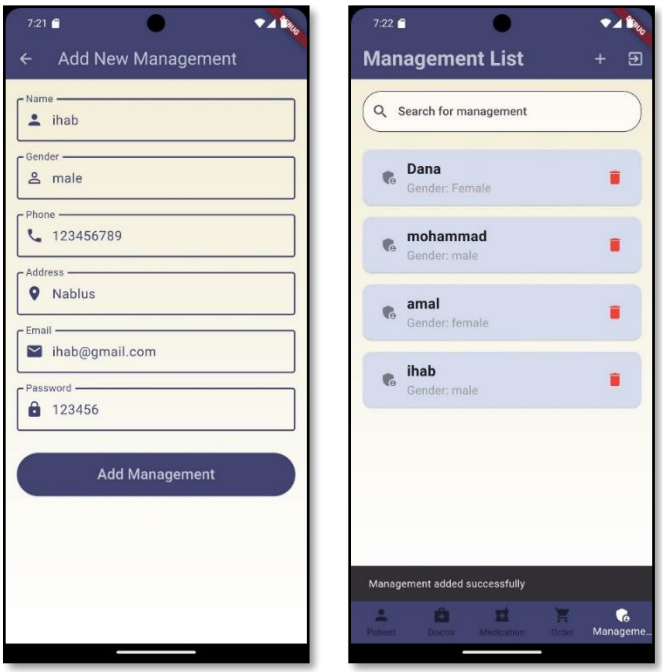


Figure 105 add management page 2

Each management entry includes a **delete icon,** which allows users to remove the entry.

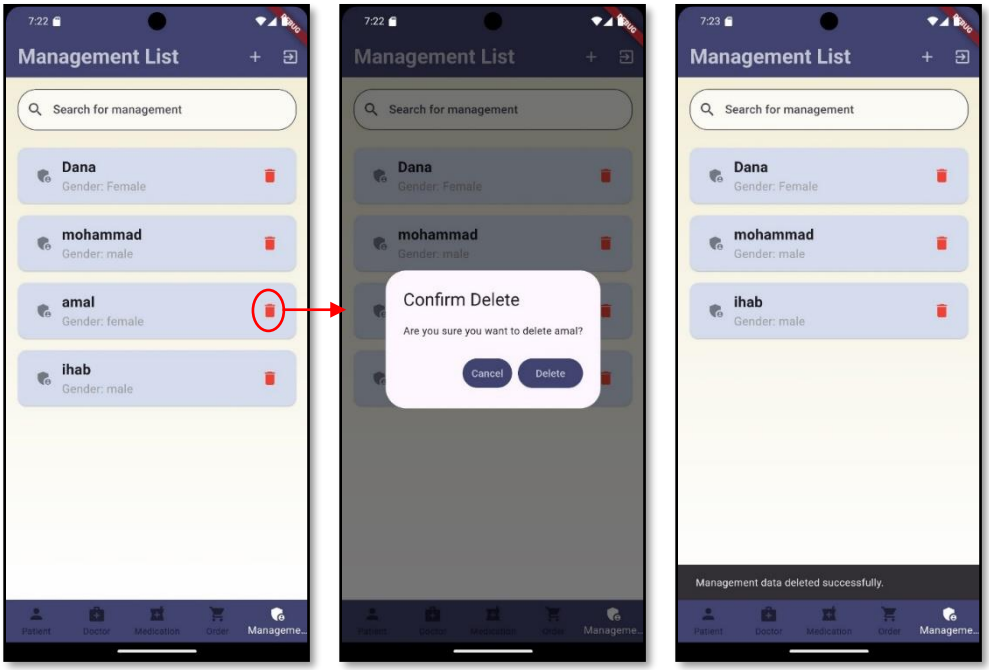


Figure 106 management list 3 & delete management

When a management member's name is selected, the user is directed to the **Management Details Page**, where the following information is displayed:

Name, Gender, Phone Number, Email, Address.

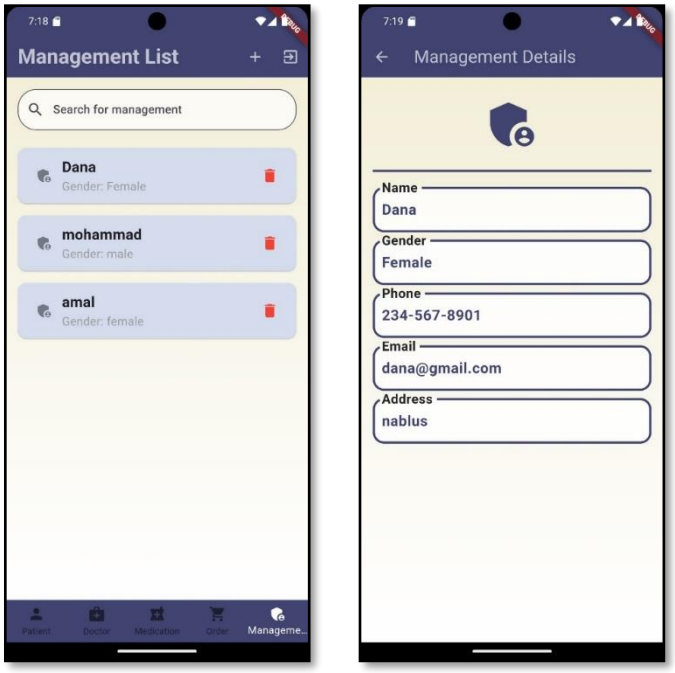


Figure 107 management list & management details page

-Logout Icon: Logs the user out of the application.

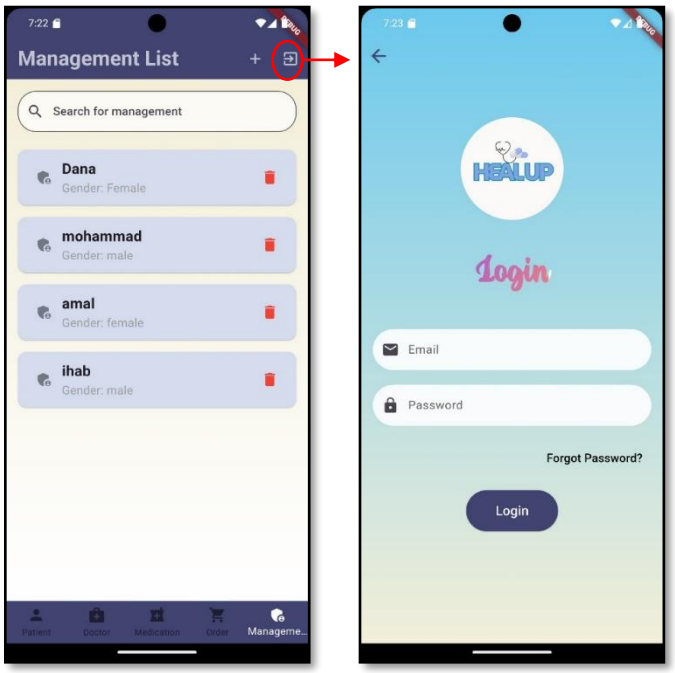


Figure 108 setting_ logout

4.2.1.5 Notification Screen:

The Notification Screen provides a centralized where patients receive all important updates related to their activities and health management. Notifications include:

Appointment Booking Notification:

When a patient books an appointment, they receive a notification with the doctor's name, appointment date, and time.

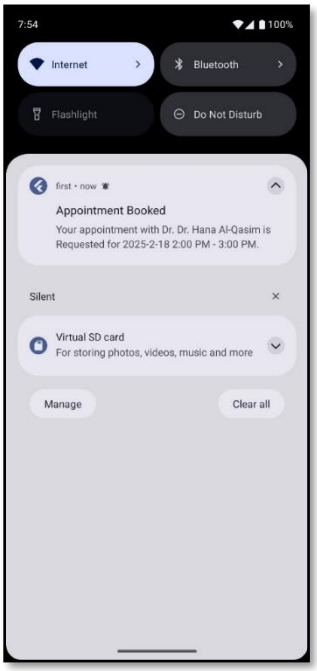


Figure 109 Appointment Booking_ notification

Appointment Confirmation Notification:

When the doctor approves the booking, a notification is sent with the doctor's name, appointment date, and time, indicating the appointment status as confirmed.

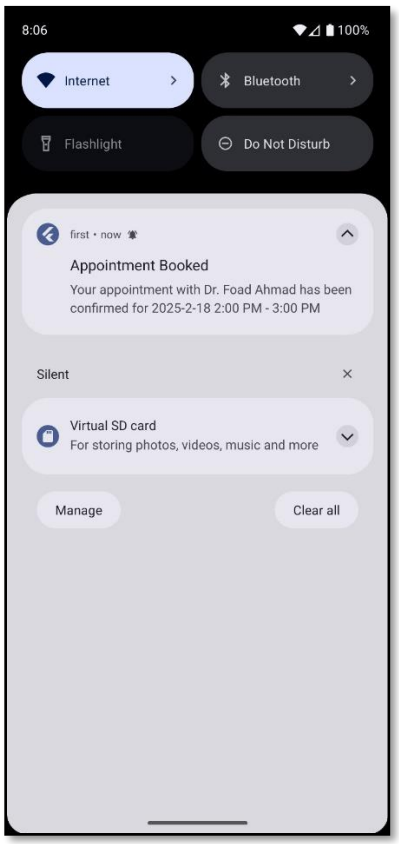


Figure 110 Appointment Confirmation_ notification

Appointment Cancellation Notification:

If the doctor rejects the appointment, the patient receives a notification with the doctor’s name, appointment date, and time, indicating the appointment status as canceled.

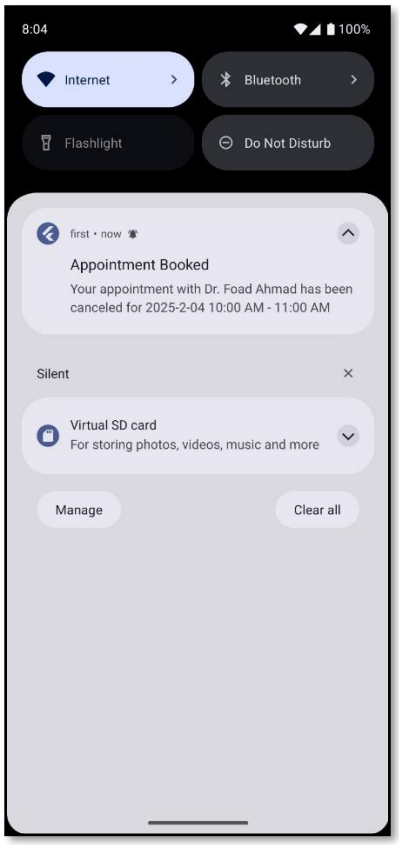


Figure 111 Appointment Cancellation _ notofication

Order Confirmation Notification:

When a patient places an order, they receive a notification confirming the successful completion of the order process.

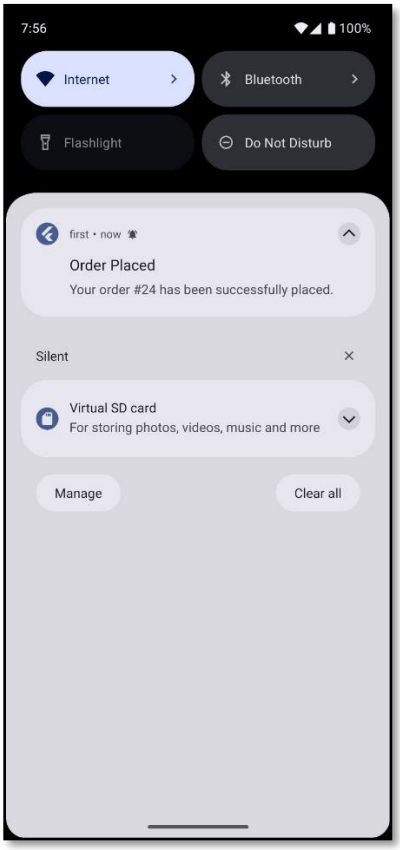


Figure 112 Order Confirmation_ notification

Health Advice Notification:

Personalized notifications are sent to the patient containing advice or tips relevant to their medical history (if available).

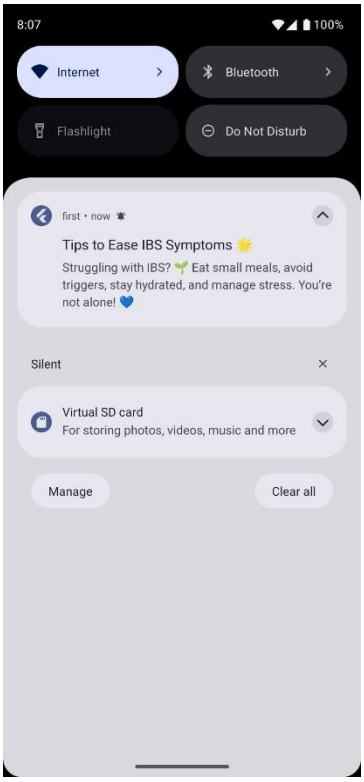


Figure 113 Health Advice_ Notification

Appointment Reminder Notification:

Patients are reminded of upcoming appointments with a notification sent one day prior, including the doctor's name, appointment date, and time.

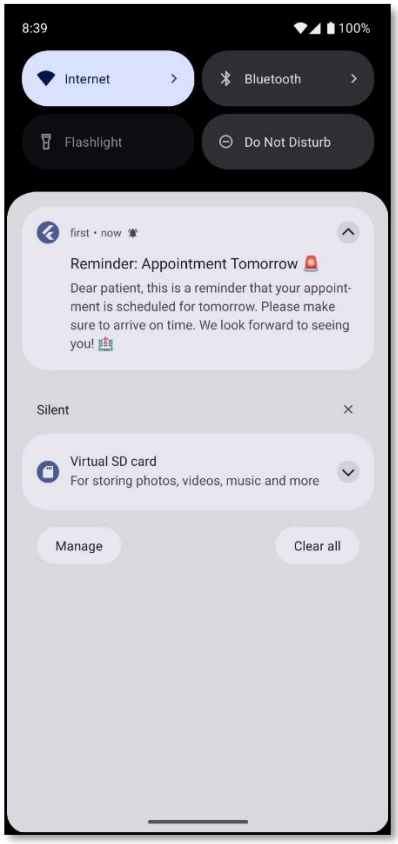


Figure 114 Appointment Reminder Notification

4.2.2 Website screens

4.2.2.1Main Screen

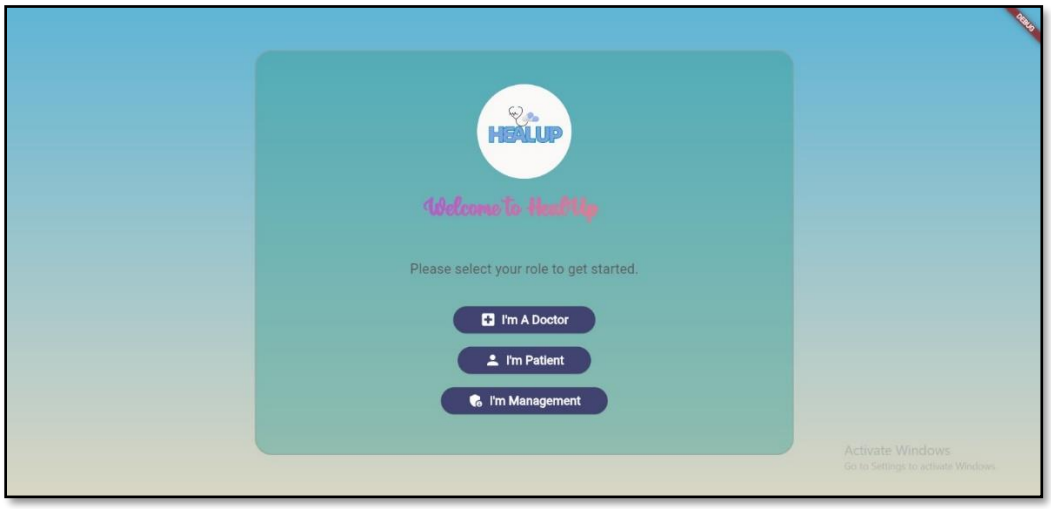


Figure 115 website welcome

4.2.2.2 Patient login Process:

The Login screen for the application:

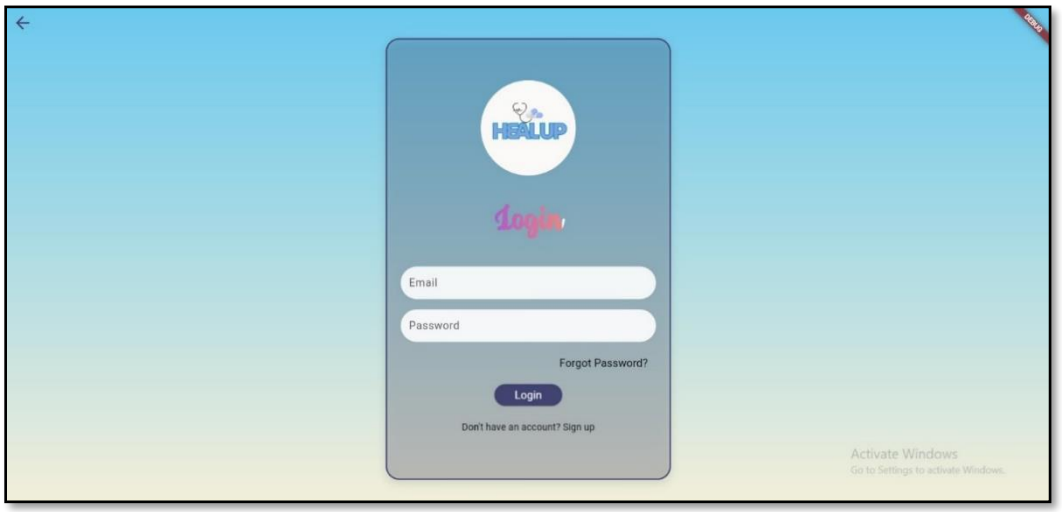


Figure 116 website patient login

Sign up screen:

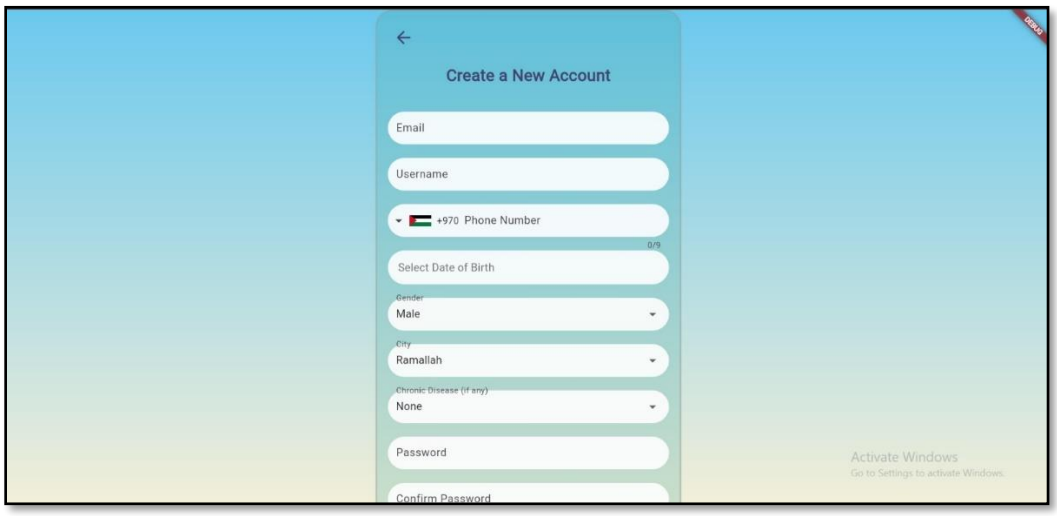


Figure 117 website patient signup

Home Page Navigation for Patients:

1.Home Screen

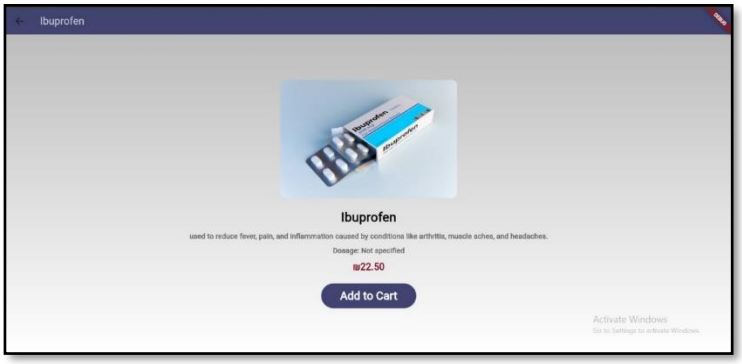
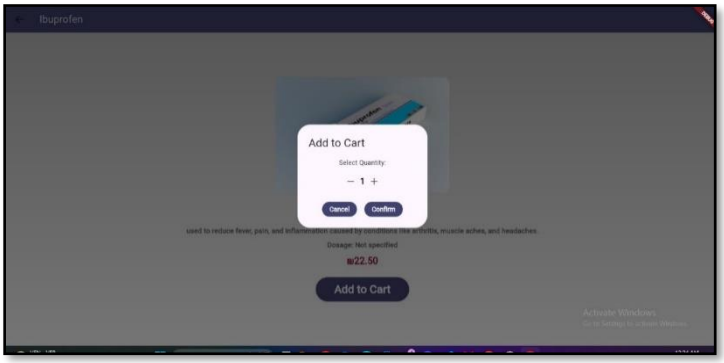


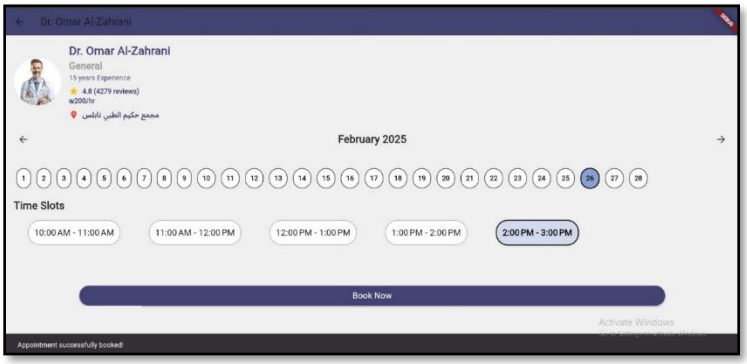
Figure 118 website patient home

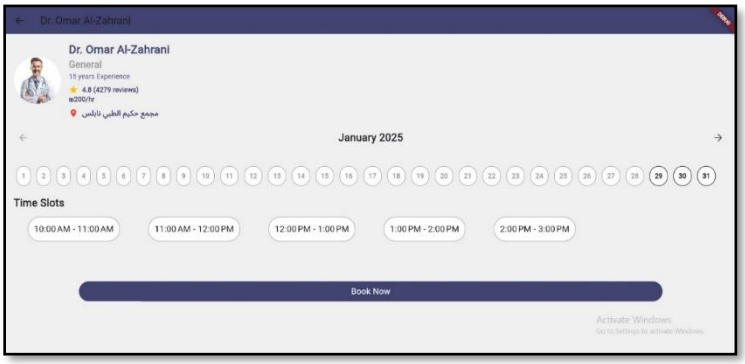


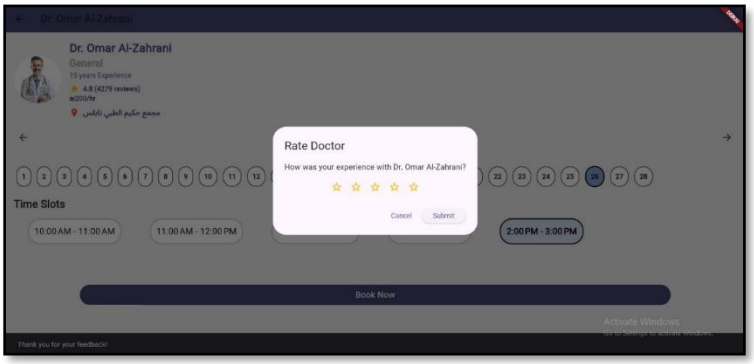

All Doctors
Search for doctors
All
General
Cardiology
Pediatrics
Neurology
Orthopedics
Dermatology
Ophthalmology
Radiology
Internal Medicine
Dr. Omar Al-Zahrani
Dr. Foad Ahmad
Dr.Amjad Al Issa


HealUp
Home
Chat
Search
Calendar
Profile
Recommended Doctors
See All
Dr. Youssef Al-Mazroui
Dr. Hana Al-Qasim
Dr. Omar Al-Zahrani
Dr. Khalid Al-Farouq
Dr. Noura Al-Saadi


All Doctors
Search for doctors
Dr. Youssef Al-Mazroui
Dr. Hana Al-Qasim
Dr. Omar Al-Zahrani
Dr. Khalid Al-Farouq
Dr. Noura Al-Saadi


Dr. Omar Al-Zahrani
General
15 years Experience
4.8 (4279 reviews)
Time Slots
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
12:00 PM - 1:00 PM
1:00 PM - 2:00 PM
2:00 PM - 3:00 PM
Book Now
Appointment successfully booked!


Dr. Omar Al-Zahrani
General
15 years Experience
4.8 (4279 reviews)
January 2025
Time Slots
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
12:00 PM - 1:00 PM
1:00 PM - 2:00 PM
2:00 PM - 3:00 PM
Book Now


Dr. Omar Al-Zahrani
General
15 years Experience
4.8 (4279 reviews)
Rate Doctor
How was your experience with Dr. Omar Al-Zahrani?
Cancel
Submit
Time Slots
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
2:00 PM - 3:00 PM
Book Now

2. Chat Screen

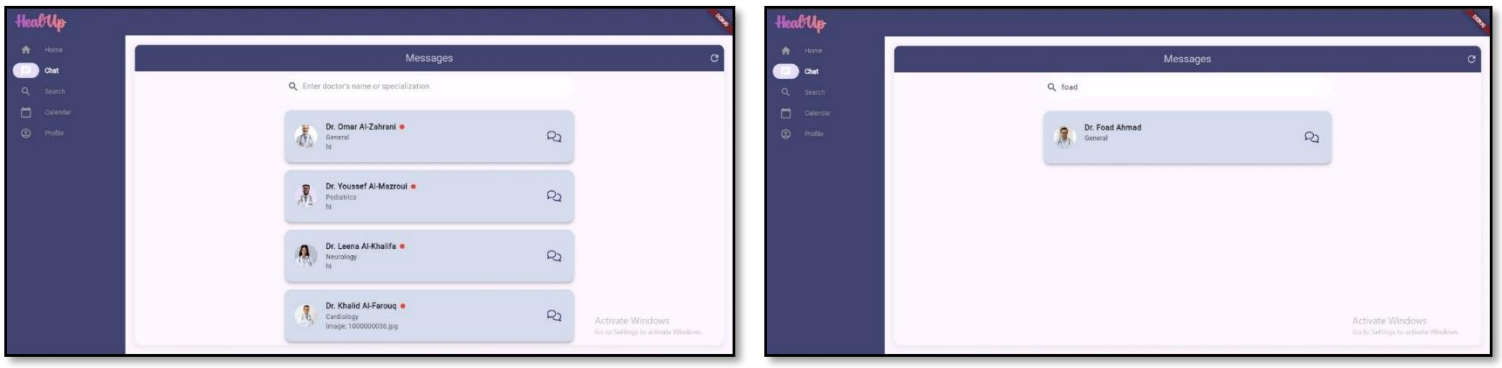
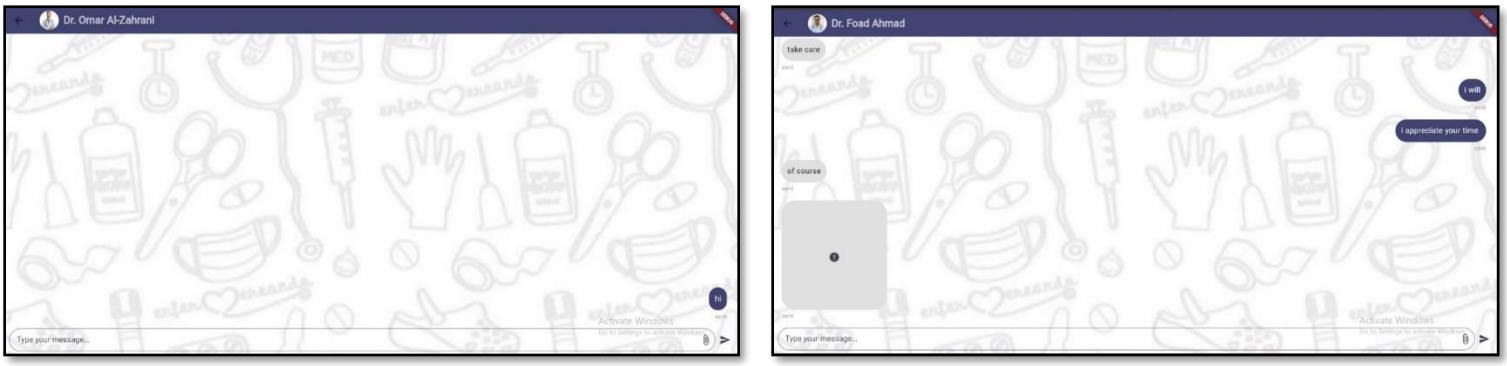
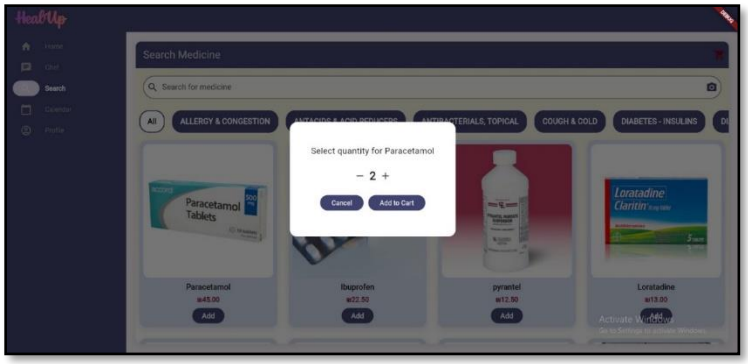


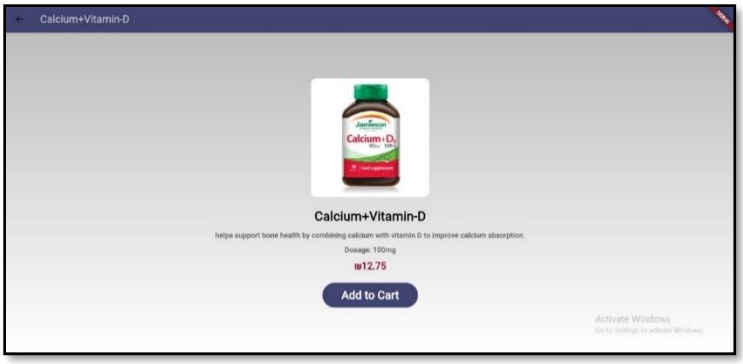
Figure 119 website patient chat screen

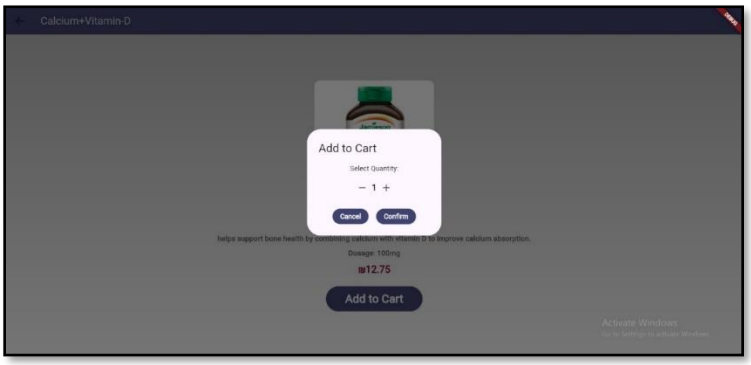


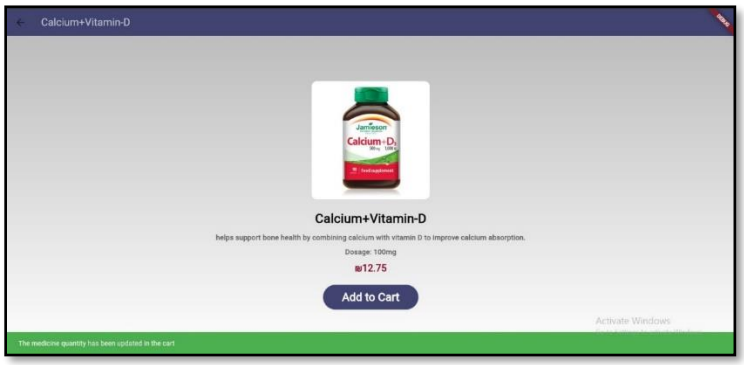
3. Search Medicine Screen

Figure 120 website patient search screen


HealUp
Search Medicine
Search for medicine
All
ALLERGY & CONGESTION
COUGH & COLD
DIABETES - INSULINS
Select quantity for Paracetamol
− 2 +
Cancel
Add to Cart
Paracetamol
Ibuprofen
pyrantel
Loratadine

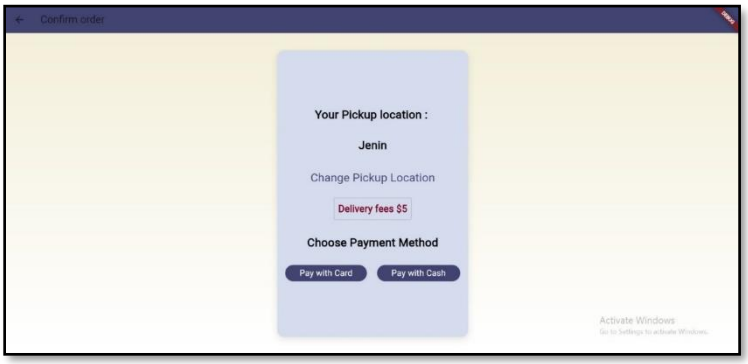

Calcium+Vitamin-D
Calcium+Vitamin-D
helps support bone health by combining calcium with vitamin D to improve calcium absorption.
Dosage: 100mg
₪12.75
Add to Cart

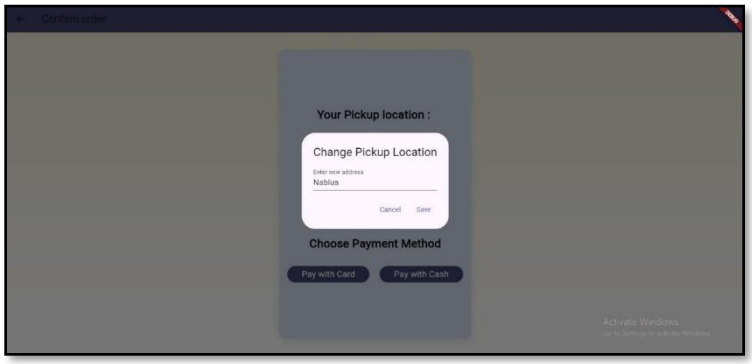

Calcium+Vitamin-D
Add to Cart
Select Quantity
− 1 +
Cancel
Confirm
Dosage: 100mg
₪12.75
Add to Cart

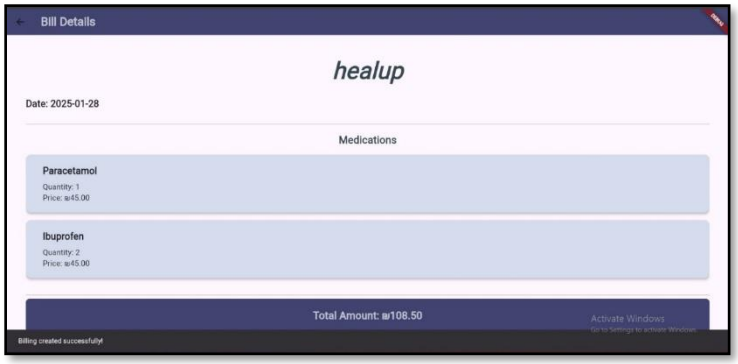

Calcium+Vitamin-D
Calcium+Vitamin-D
helps support bone health by combining calcium with vitamin D to improve calcium absorption.
Dosage: 100mg
₪12.75
Add to Cart
The medicine quantity has been updated in the cart


Cart
Paracetamol
Ibuprofen
Calcium+Vitamin-D
pyrantel
Total Price:
₪0.00
Confirm


Cart
Paracetamol
Ibuprofen
Calcium+Vitamin-D
pyrantel
Total Price:
₪90.00
Confirm


Confirm order
Your Pickup location :
Jenin
Change Pickup Location
Delivery fees $5
Choose Payment Method
Pay with Card
Pay with Cash


Confirm order
Your Pickup location :
Change Pickup Location
Enter new address
Nablus
Cancel
Save
Choose Payment Method
Pay with Card
Pay with Cash



4. Appointment List Screen

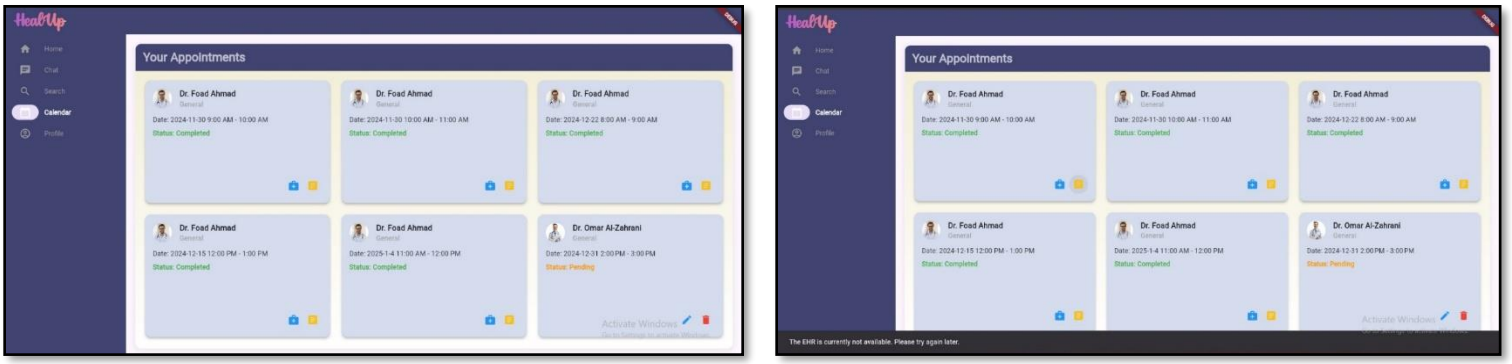
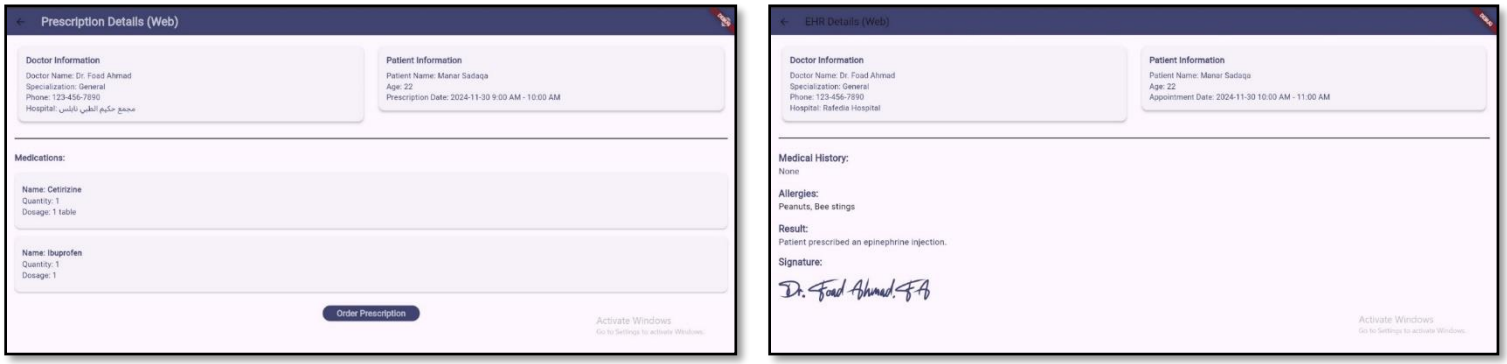
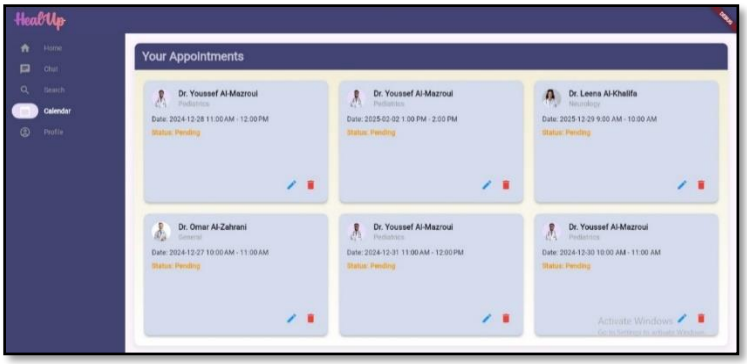
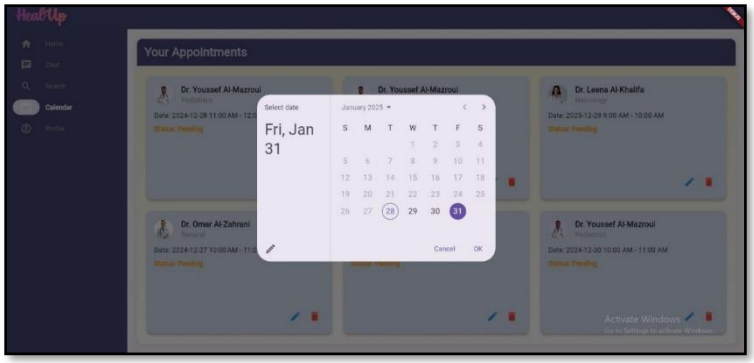
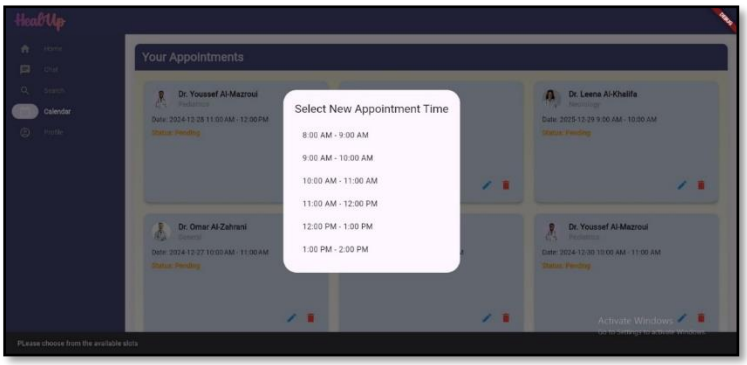


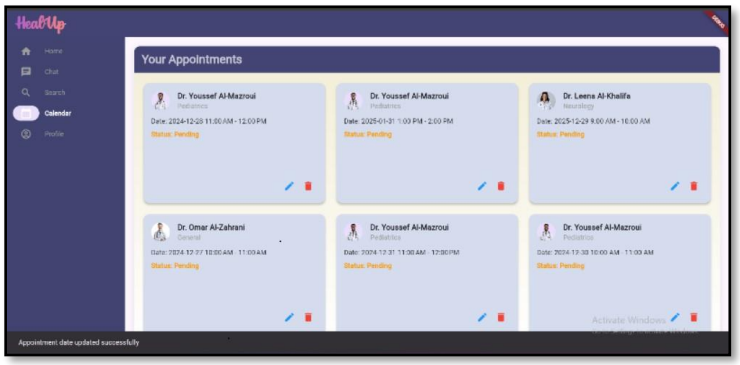
Figure 121 website patient appointment screen

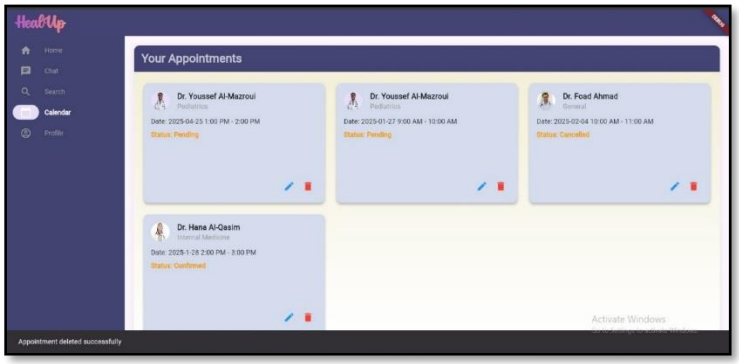


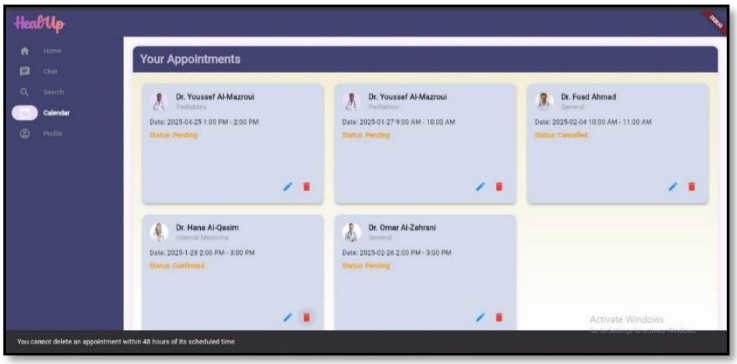

HealUp
Your Appointments
Dr. Youssef Al-Mazroui
Dr. Youssef Al-Mazroui
Dr. Leena Al-Khalifa
Dr. Omar Al-Zahrani
Dr. Youssef Al-Mazroui
Dr. Youssef Al-Mazroui


HealUp
Your Appointments
Select date
Fri, Jan 31
Cancel
OK


HealUp
Your Appointments
Select New Appointment Time
8:00 AM - 9:00 AM
9:00 AM - 10:00 AM
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
12:00 PM - 1:00 PM
1:00 PM - 2:00 PM


HealUp
Your Appointments
Appointment date updated successfully


HealUp
Your Appointments
Dr. Youssef Al-Mazroui
Dr. Youssef Al-Mazroui
Dr. Foad Ahmad
Dr. Hana Al-Qasim
Appointment deleted successfully


HealUp
Your Appointments
Dr. Youssef Al-Mazroui
Dr. Youssef Al-Mazroui
Dr. Foad Ahmad
Dr. Hana Al-Qasim
Dr. Omar Al-Zahrani
You cannot delete an appointment within 48 hours of its scheduled time.

5. Profile Screen

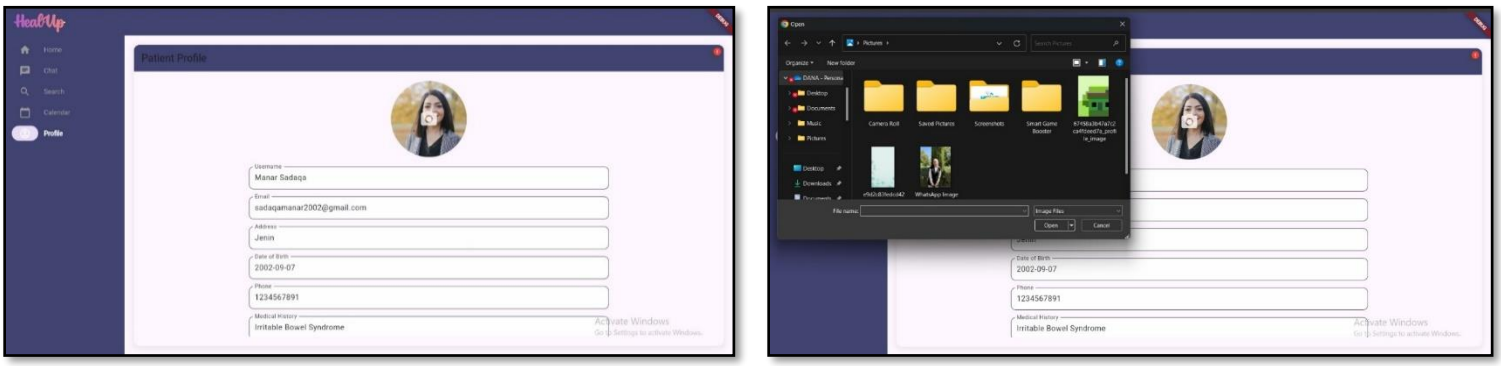
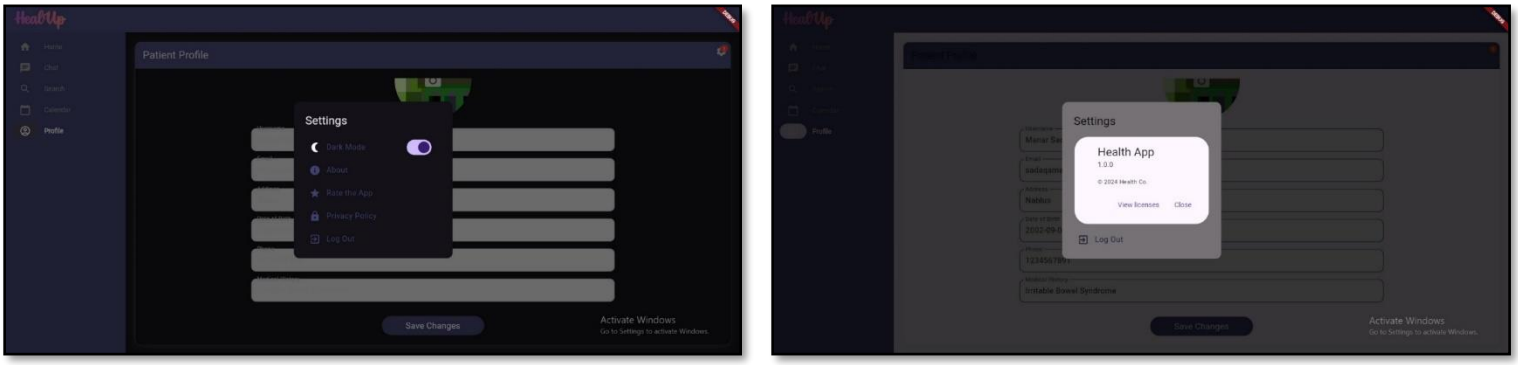


Figure 122 website patient profile screen

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1.0.0
© 2024 Health Co.
Powered by Flutter
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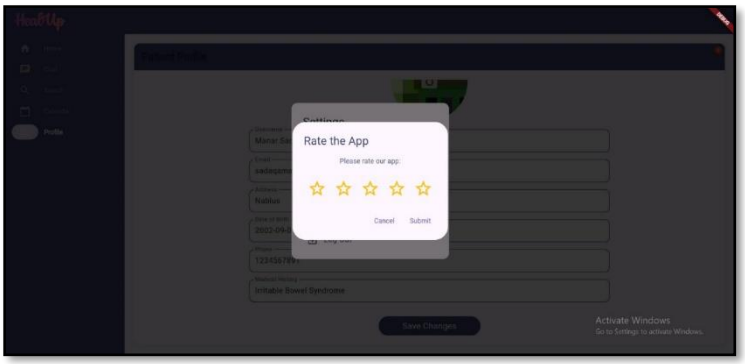
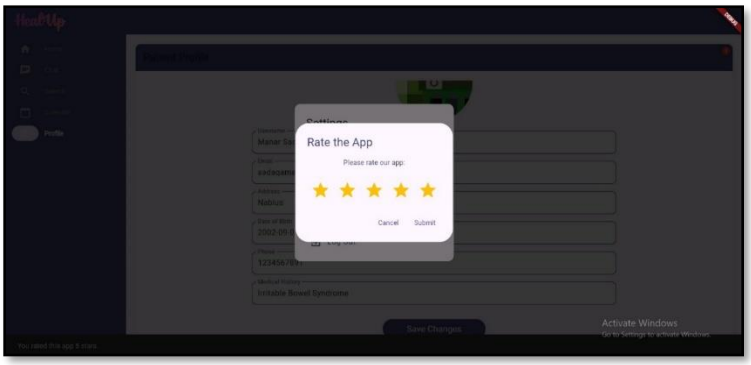
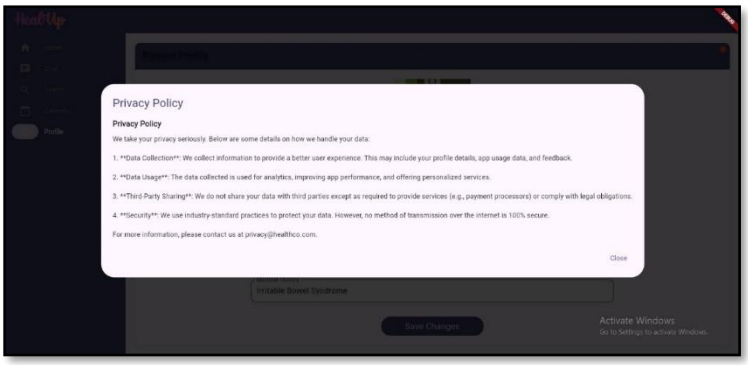
1 license.
abseil-cpp
2 licenses.
accessibility
15 licenses.
aFileChooser
1 license.
angle
32 licenses.
animated_text_kit
1 license.
archive
1 license.
_flutterfire_internals
1 license.
Activate Windows


Rate the App
Please rate our app:
Cancel
Submit
Irritable Bowel Syndrome
Save Changes
Activate Windows


Rate the App
Please rate our app:
Cancel
Submit
Irritable Bowel Syndrome
Save Changes
Activate Windows


Privacy Policy
Privacy Policy
We take your privacy seriously. Below are some details on how we handle your data:
1. **Data Collection**: We collect information to provide a better user experience. This may include your profile details, app usage data, and feedback.
2. **Data Usage**: The data collected is used for analytics, improving app performance, and offering personalized services.
3. **Third-Party Sharing**: We do not share your data with third parties except as required to provide services (e.g., payment processors) or comply with legal obligations.
4. **Security**: We use industry-standard practices to protect your data. However, no method of transmission over the internet is 100% secure.
For more information, please contact us at privacy@healthco.com.
Close
Irritable Bowel Syndrome
Save Changes
Activate Windows

4.2.2.3 Doctor login Process:

The Login screen for the application

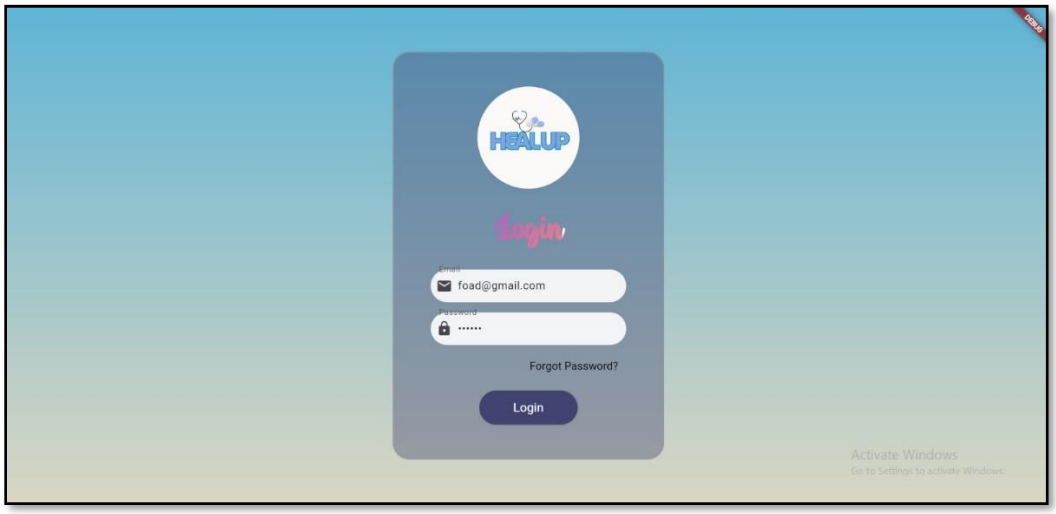


Figure 123 website doctor login

Home Page Navigation for doctors:

1. Home Screen

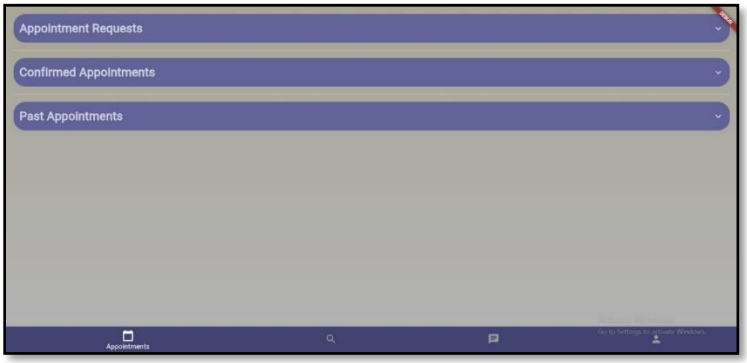
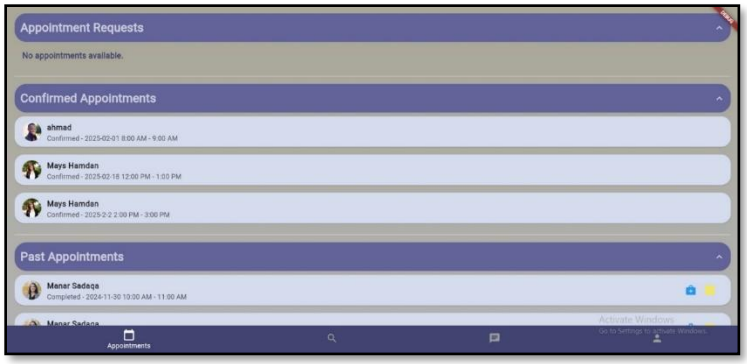
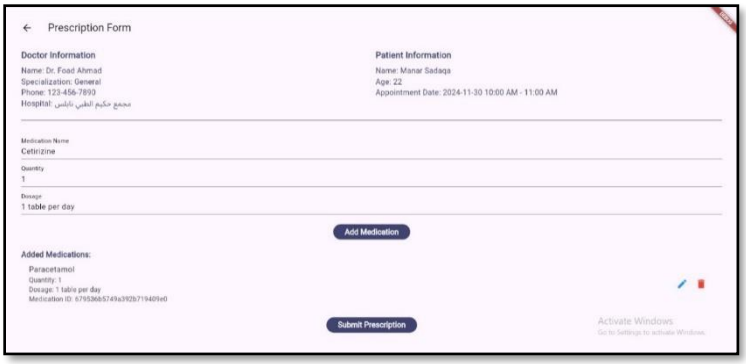
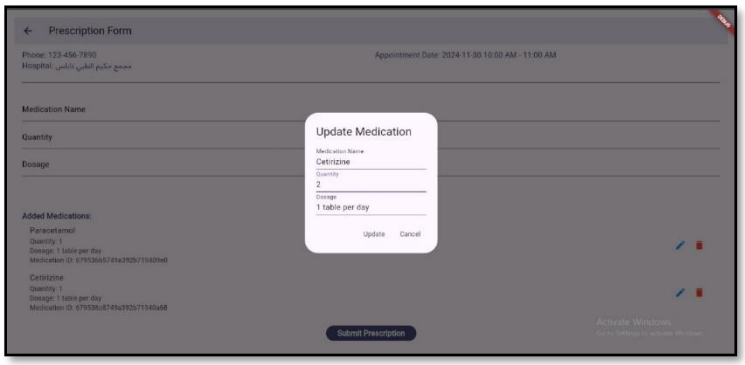
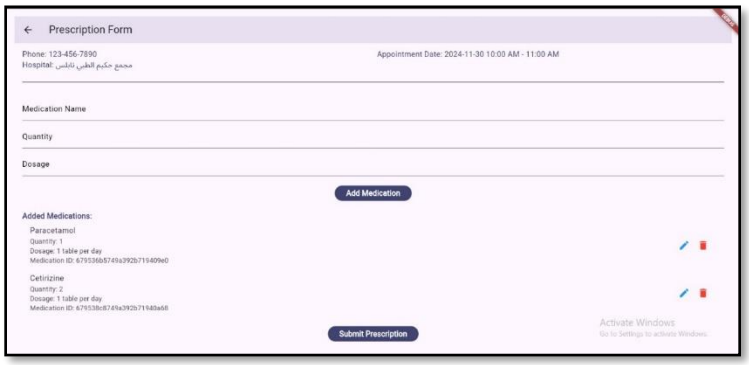


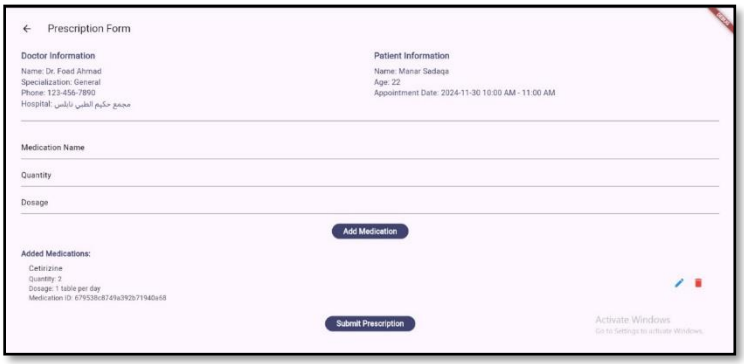
Figure 124 website doctor home screen

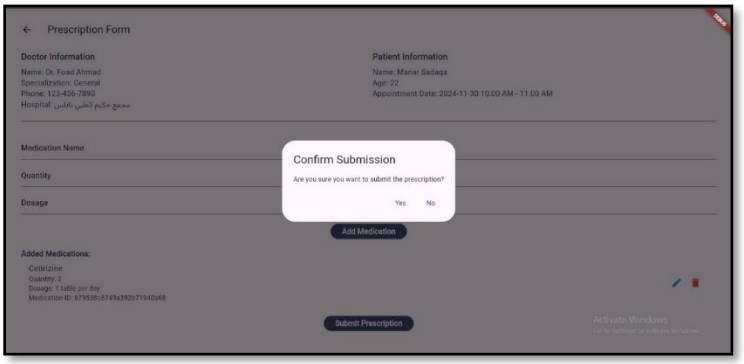

Appointment Requests
No appointments available.
Confirmed Appointments
ahmad
Confirmed - 2025-02-01 8:00 AM - 9:00 AM
Mays Hamdan
Confirmed - 2025-02-18 12:00 PM - 1:00 PM
Mays Hamdan
Confirmed - 2025-2-2 2:00 PM - 3:00 PM
Past Appointments
Manar Sadaqa
Completed - 2024-11-30 10:00 AM - 11:00 AM
Appointments

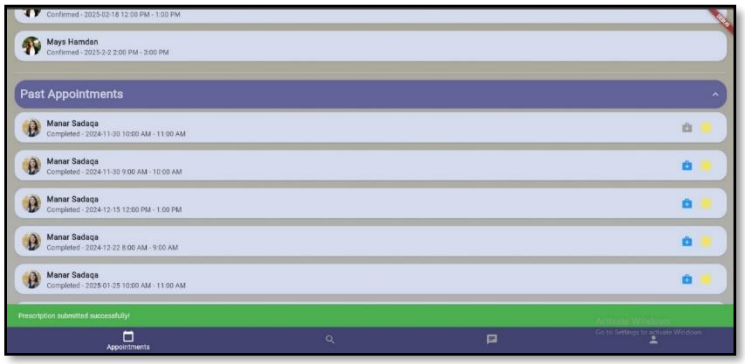

Prescription Form
Doctor Information
Name: Dr. Foad Ahmad
Specialization: General
Phone: 123-456-7890
Hospital: مجمع حكيم الطبي نابلس
Patient Information
Name: Manar Sadaqa
Age: 22
Appointment Date: 2024-11-30 10:00 AM - 11:00 AM
Medication Name
Cetirizine
Quantity
1
Dosage
1 table per day
Add Medication
Added Medications:
Paracetamol
Quantity: 1
Dosage: 1 table per day
Medication ID: 679536b5749a392b719409e0
Submit Prescription


Prescription Form
Phone: 123-456-7890
Hospital: مجمع حكيم الطبي نابلس
Appointment Date: 2024-11-30 10:00 AM - 11:00 AM
Medication Name
Quantity
Dosage
Update Medication
Medication Name
Cetirizine
Quantity
2
Dosage
1 table per day
Update
Cancel
Added Medications:
Paracetamol
Quantity: 1
Dosage: 1 table per day
Medication ID: 679536b5749a392b719409e0
Cetirizine
Quantity: 1
Dosage: 1 table per day
Medication ID: 679538c8749a392b71940a68
Submit Prescription

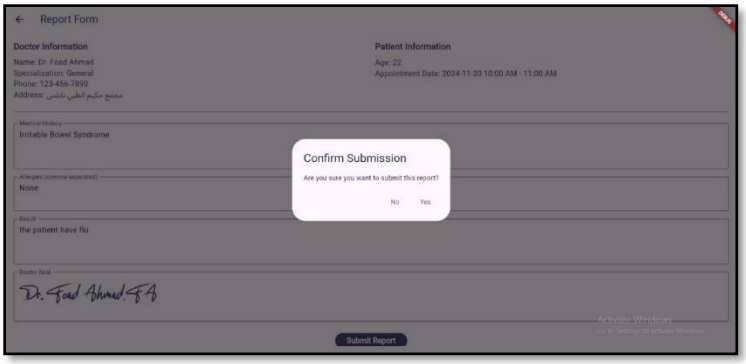

Prescription Form
Phone: 123-456-7890
Hospital: مجمع حكيم الطبي نابلس
Appointment Date: 2024-11-30 10:00 AM - 11:00 AM
Medication Name
Quantity
Dosage
Add Medication
Added Medications:
Paracetamol
Quantity: 1
Dosage: 1 table per day
Medication ID: 679536b5749a392b719409e0
Cetirizine
Quantity: 2
Dosage: 1 table per day
Medication ID: 679538c8749a392b71940a68
Submit Prescription

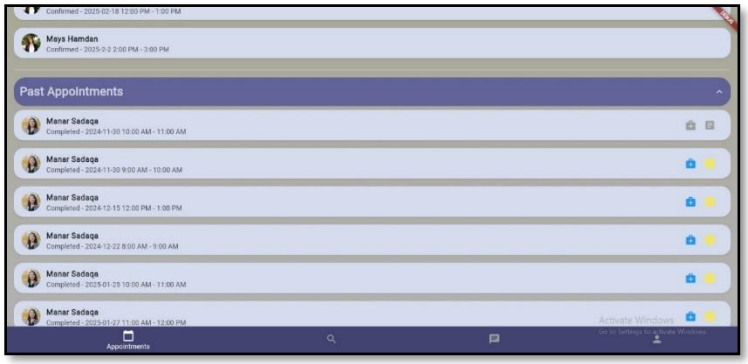

Prescription Form
Doctor Information
Name: Dr. Foad Ahmad
Specialization: General
Phone: 123-456-7890
Hospital: مجمع حكيم الطبي نابلس
Patient Information
Name: Manar Sadaqa
Age: 22
Appointment Date: 2024-11-30 10:00 AM - 11:00 AM
Medication Name
Quantity
Dosage
Add Medication
Added Medications:
Cetirizine
Quantity: 2
Dosage: 1 table per day
Medication ID: 679538c8749a392b71940a68
Submit Prescription


Prescription Form
Doctor Information
Name: Dr. Foad Ahmad
Specialization: General
Phone: 123-456-7890
Hospital: مجمع حكيم الطبي نابلس
Patient Information
Name: Manar Sadaqa
Age: 22
Appointment Date: 2024-11-30 10:00 AM - 11:00 AM
Medication Name
Quantity
Dosage
Confirm Submission
Are you sure you want to submit the prescription?
Yes
No
Add Medication
Added Medications:
Cetirizine
Quantity: 2
Dosage: 1 table per day
Medication ID: 679538c8749a392b71940a68
Submit Prescription

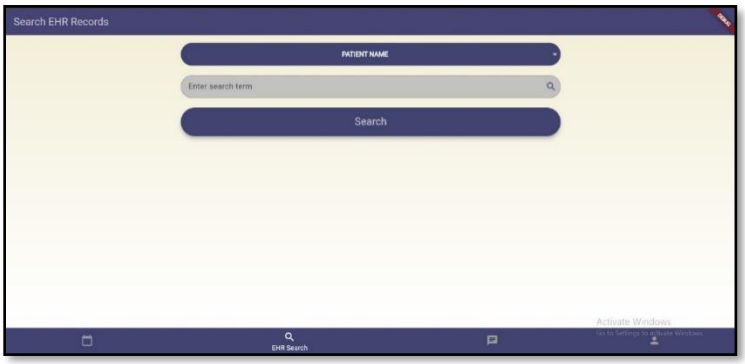

Mays Hamdan
Confirmed - 2025-2-2 2:00 PM - 3:00 PM
Past Appointments
Manar Sadaqa
Completed - 2024-11-30 10:00 AM - 11:00 AM
Manar Sadaqa
Completed - 2024-11-30 9:00 AM - 10:00 AM
Manar Sadaqa
Completed - 2024-12-15 12:00 PM - 1:00 PM
Manar Sadaqa
Completed - 2024-12-22 8:00 AM - 9:00 AM
Manar Sadaqa
Completed - 2025-01-25 10:00 AM - 11:00 AM
Prescription submitted successfully!
Appointments


Report Form
Doctor Information
Name: Dr. Foad Ahmad
Specialization: General
Phone: 123-456-7890
Address: مجمع حكيم الطبي نابلس
Patient Information
Age: 22
Appointment Date: 2024-11-30 10:00 AM - 11:00 AM
Medical History
Irritable Bowel Syndrome
Allergies (comma-separated)
None
Result
the patient have flu
Doctor Seal
Dr. Foad Ahmad
Submit Report





2. Search EHR Records Screen



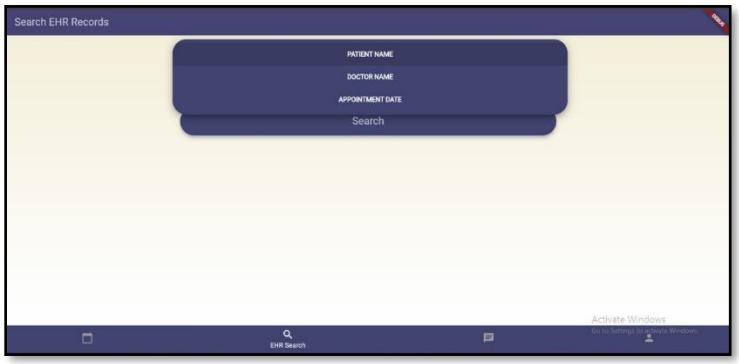
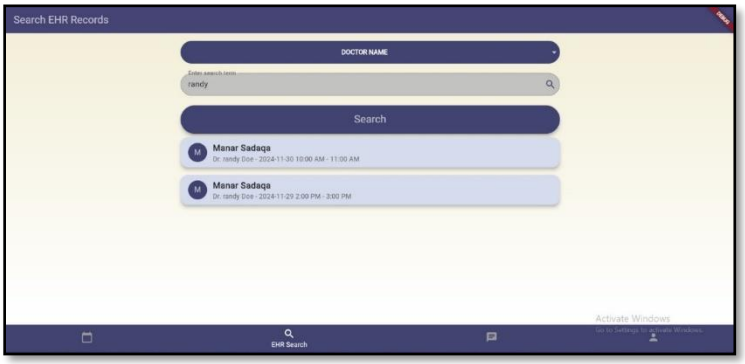


Figure 125 website doctor search HER screen

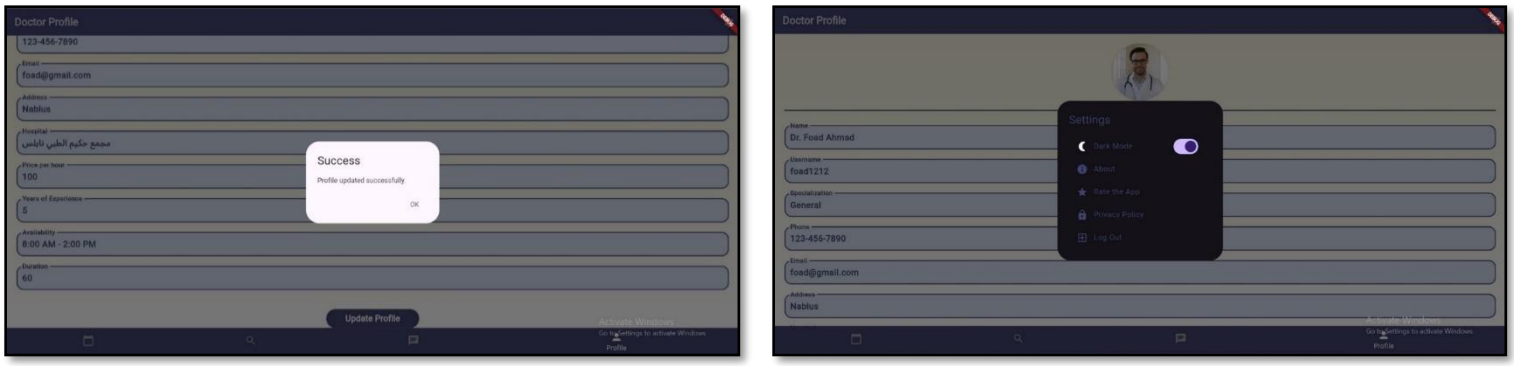


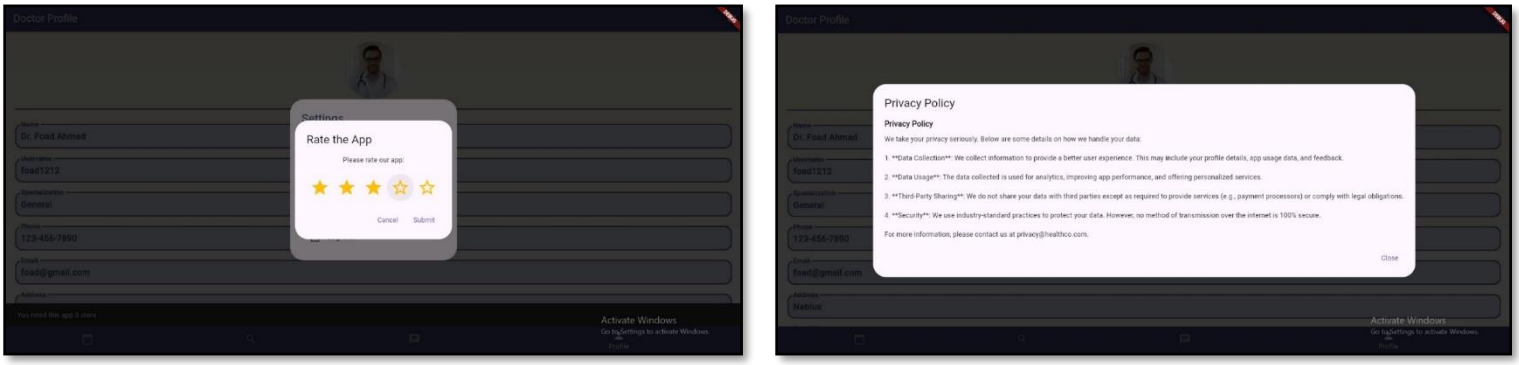
3. Chat Screen

Figure 126 website doctor chat screen

4. Profile Screen

Figure 127 website doctor profile screen





4.2.2.4 Management login process:

The Login screen for the application

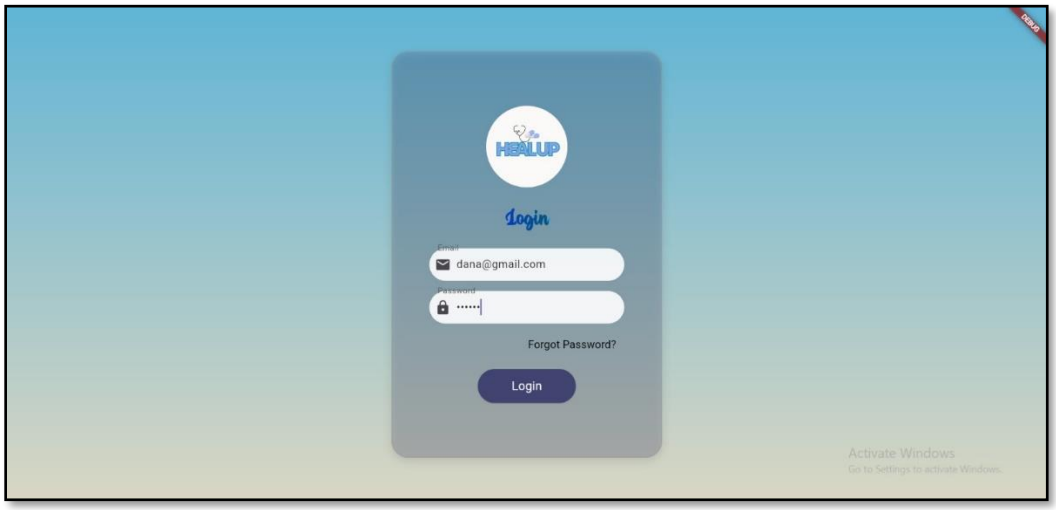


Figure 128 website management login

Home Page Navigation for managements:

1. Patient List Screen

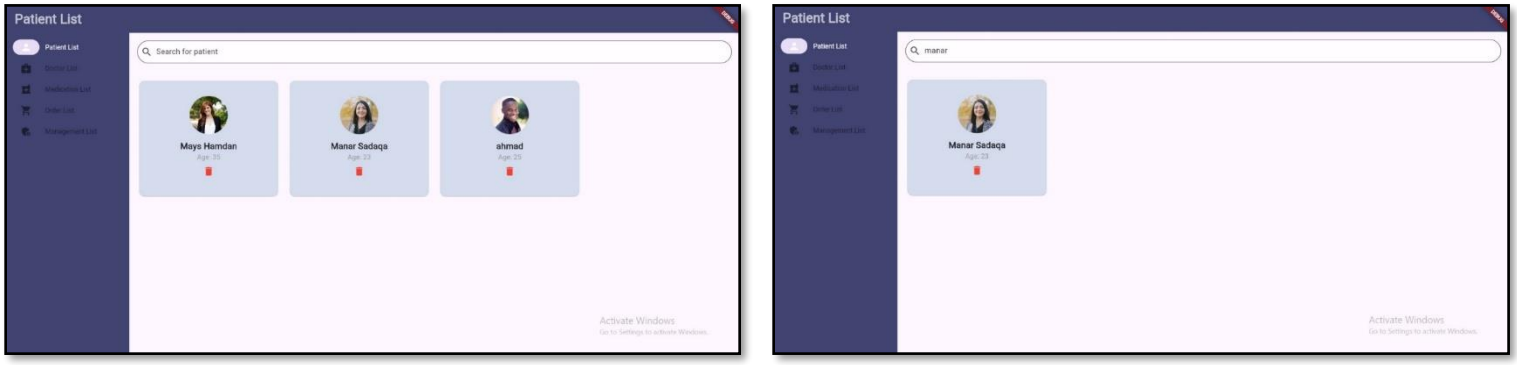
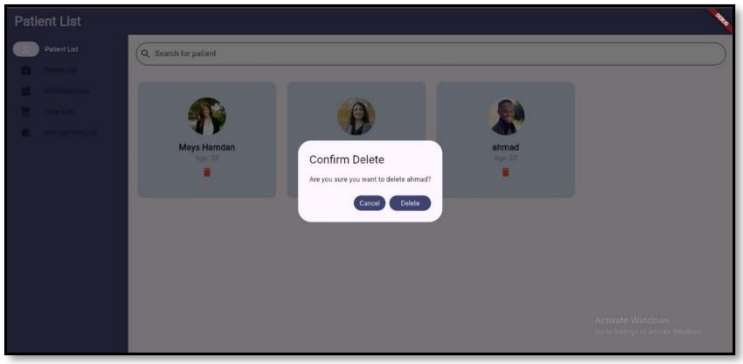
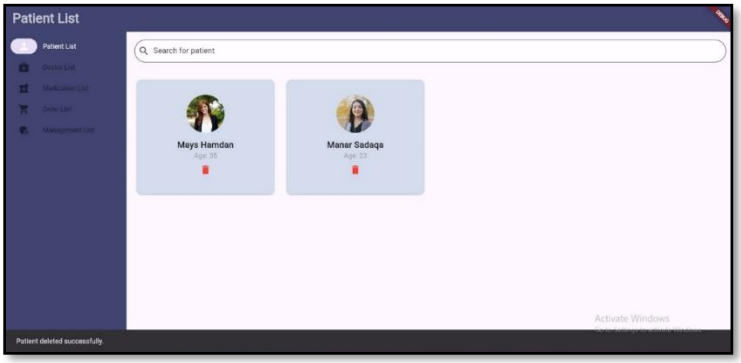


Figure 129 website patient list screen





2. Doctors List Screen

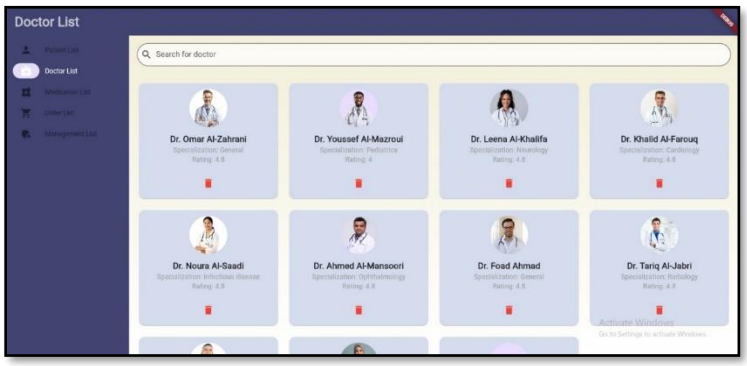
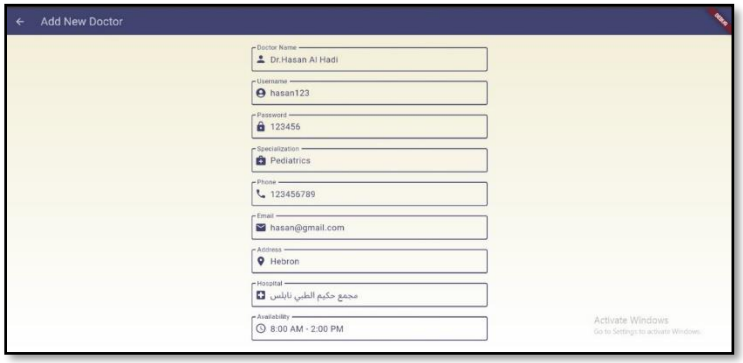


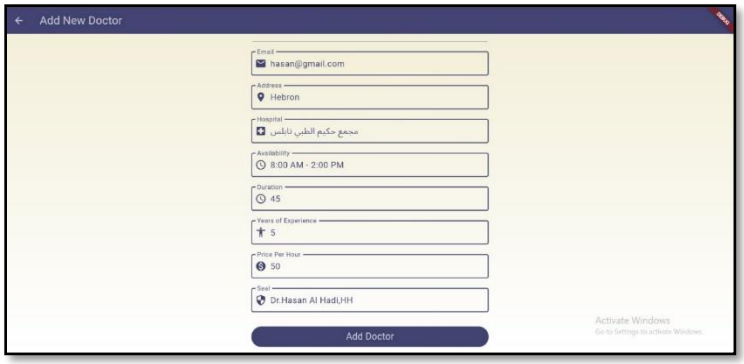
Figure 130 website doctor list screen

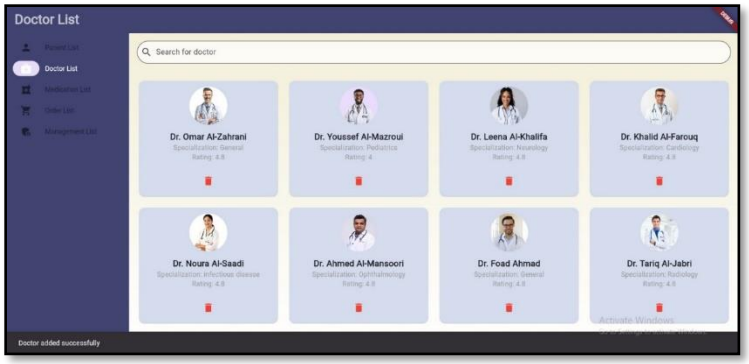

Doctor Details
Name
Dr. Omar Al-Zahrani
Username
omar
Email
omar@gmail.com
Specialization
General
Phone
1234567890
Address
Ramallah
Hospital
مجمع حكيم الطبي نابلس

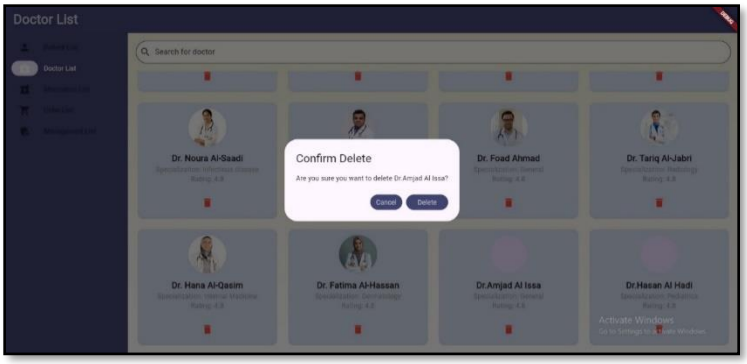

Doctor Details
1234567890
Address
Ramallah
Hospital
مجمع حكيم الطبي نابلس
Experience
15.00
Price Per Hour
200.00
Rating
4.80
Availability
10:00 AM - 3:00 PM
Duration
60.00
Reviews
4279.00
Seal
Dr. Omar Al-Zahrani,OZ

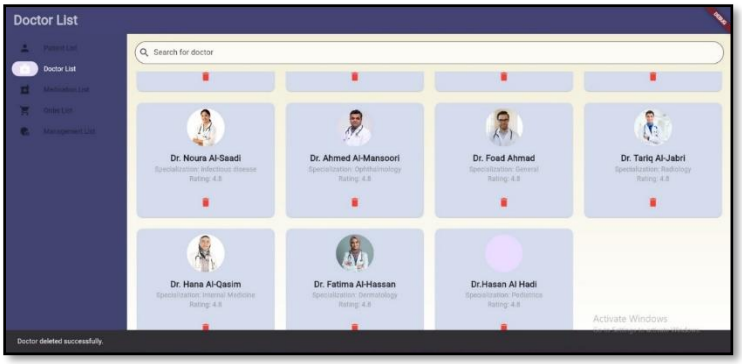

Add New Doctor
Phone
Email
Address
Hospital
Availability
Duration
Years of Experience


Add New Doctor
Doctor Name
Dr.Hasan Al Hadi
Username
hasan123
Password
123456
Specialization
Pediatrics
Phone
123456789
Email
hasan@gmail.com
Address
Hebron
Hospital
مجمع حكيم الطبي نابلس
Availability
8:00 AM - 2:00 PM


Add New Doctor
Email
hasan@gmail.com
Address
Hebron
Hospital
مجمع حكيم الطبي نابلس
Availability
8:00 AM - 2:00 PM
Duration
45
Years of Experience
5
Price Per Hour
50
Seal
Dr.Hasan Al Hadi,HH
Add Doctor


Doctor List
Search for doctor
Dr. Omar Al-Zahrani
Dr. Youssef Al-Mazroui
Dr. Leena Al-Khalifa
Dr. Khalid Al-Farouq
Dr. Noura Al-Saadi
Dr. Ahmed Al-Mansoori
Dr. Foad Ahmad
Dr. Tariq Al-Jabri
Doctor added successfully





3. Medication List Screen

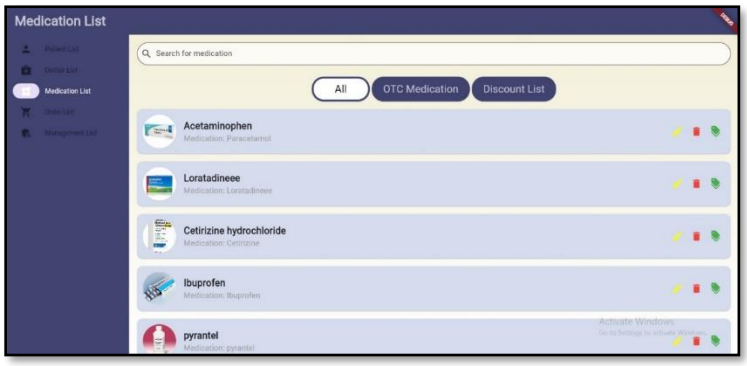
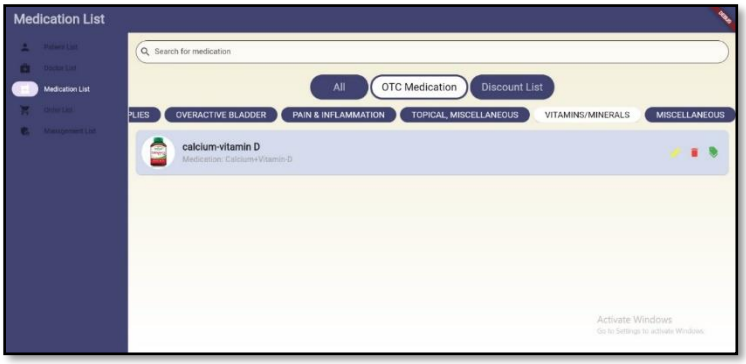
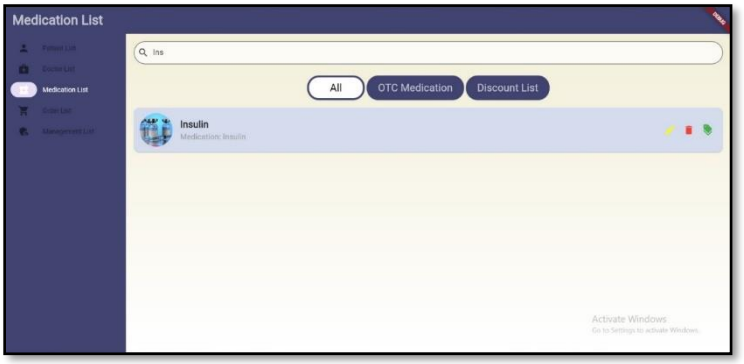
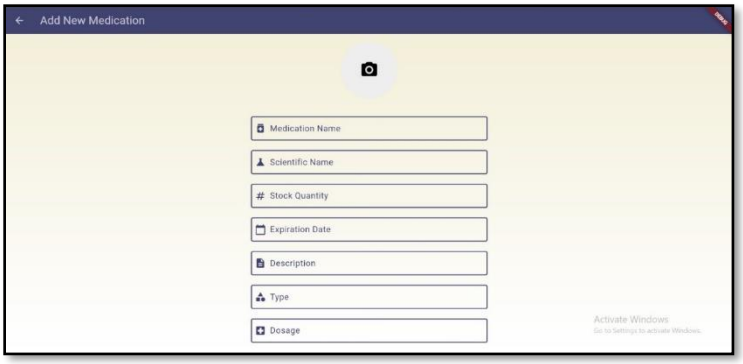


Figure 131 website medication list screen

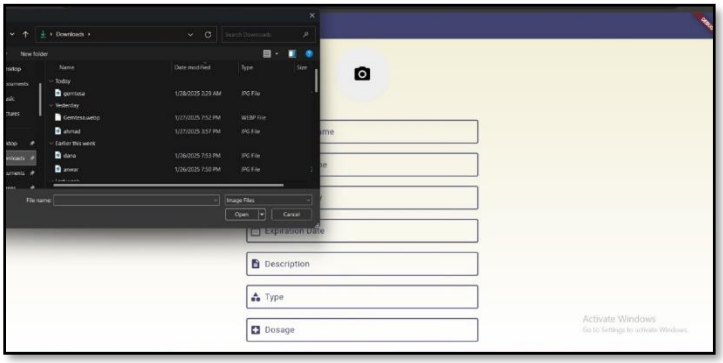


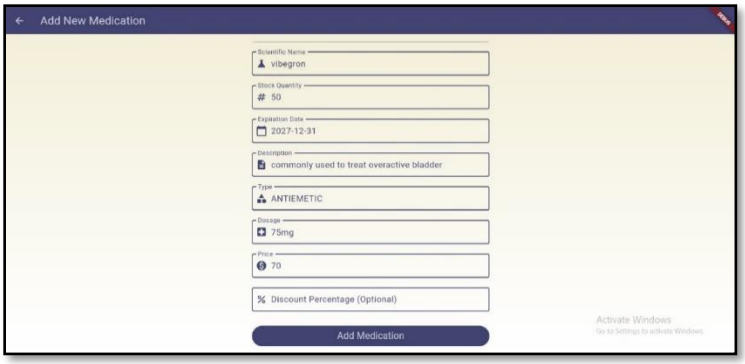


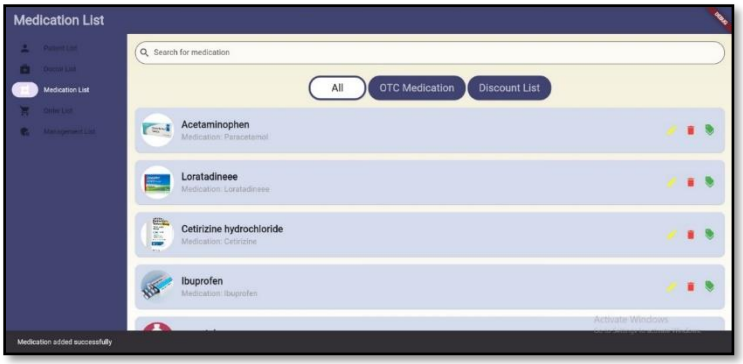

Medication Details
Paracetamol Tablets
Medication Name
Paracetamol
Scientific Name
Acetaminophen
Stock Quantity
150.00
Expiration Date
2026-12-31
Description
Pain reliever and fever reducer.

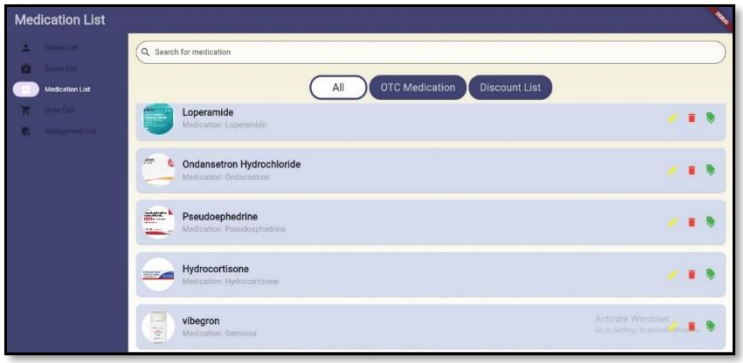

Add New Medication
Medication Name
Scientific Name
Stock Quantity
Expiration Date
Description
Type
Dosage

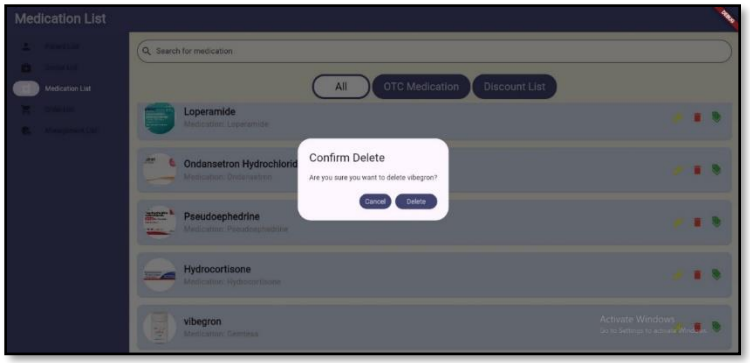

Add New Medication
gemtesa.jpg
Medication Name
Gemtesa
Scientific Name
vibegron
Stock Quantity
50
Expiration Date
2027-12-31
Description
commonly used to treat overactive bladder
Type
ANTIEMETIC
Dosage
75mg

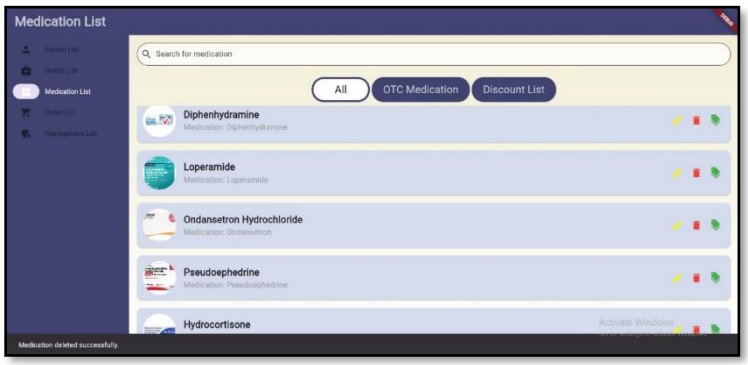

Description
Type
Dosage


Add New Medication
Scientific Name
vibegron
Stock Quantity
50
Expiration Date
2027-12-31
Description
commonly used to treat overactive bladder
Type
ANTIEMETIC
Dosage
75mg
Price
70
Discount Percentage (Optional)
Add Medication

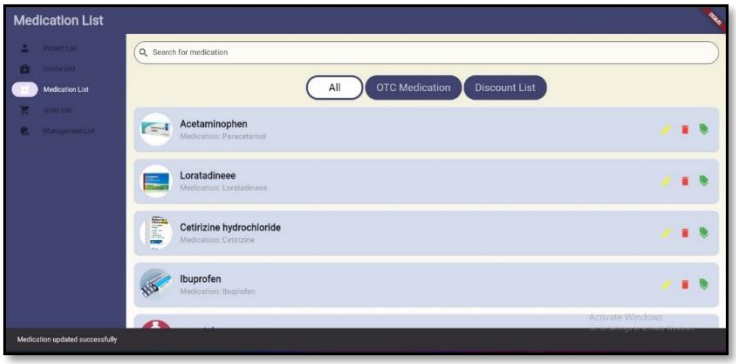

Medication List
Search for medication
All
OTC Medication
Discount List
Acetaminophen
Medication: Paracetamol
Loratadineee
Medication: Loratadineee
Cetirizine hydrochloride
Medication: Cetirizine
Ibuprofen
Medication: Ibuprofen
Medication added successfully


Medication List
Search for medication
All
OTC Medication
Discount List
Loperamide
Ondansetron Hydrochloride
Pseudoephedrine
Hydrocortisone
vibegron

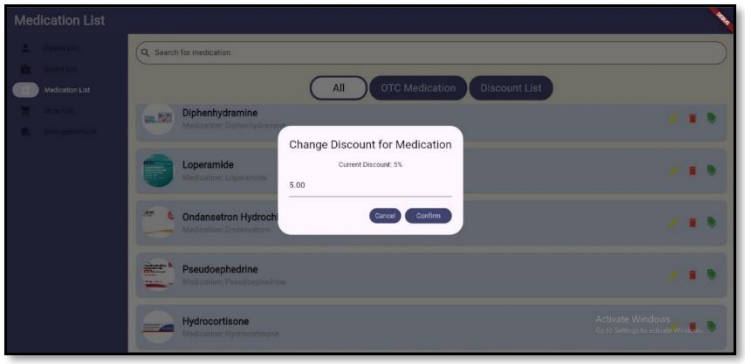

Medication List
Search for medication
All
OTC Medication
Discount List
Loperamide
Confirm Delete
Are you sure you want to delete vibegron?
Cancel
Delete
Pseudoephedrine
Hydrocortisone
vibegron

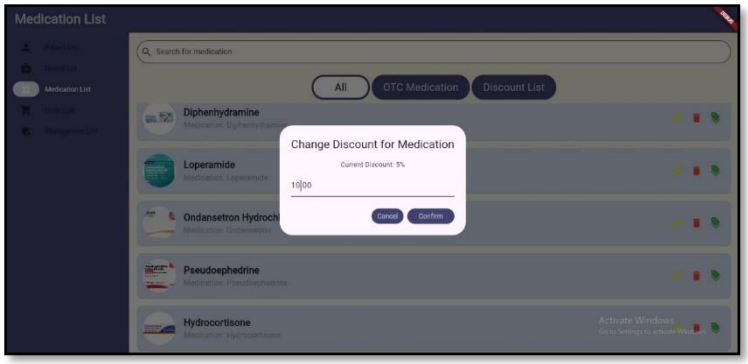

Medication List
Search for medication
All
OTC Medication
Discount List
Diphenhydramine
Loperamide
Ondansetron Hydrochloride
Pseudoephedrine
Hydrocortisone
Medication deleted successfully.

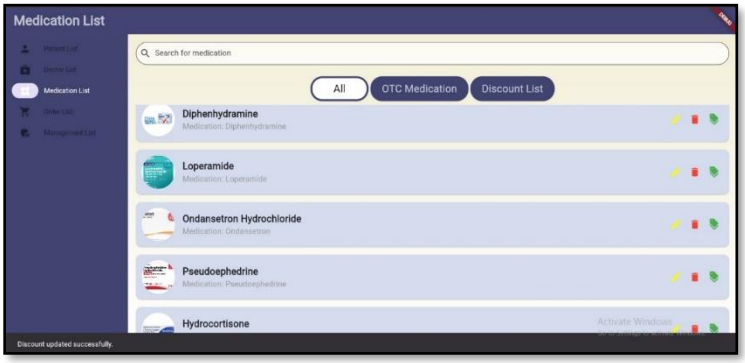

Edit Medication
Medication Name
Loratadine
Scientific Name
Loratadine
Stock Quantity
140
Expiration Date
2025-07-10
Description
used to relieve allergy symptoms such as runny nose.
Type
ALLERGY & CONGESTION
Dosage
100mg
Price
10
Update Medication


Medication List
Search for medication
All
OTC Medication
Discount List
Acetaminophen
Loratadineee
Cetirizine hydrochloride
Ibuprofen
Medication updated successfully


Edit Medication
Medication Name
Loratadine
Scientific Name
Loratadine
Stock Quantity
140
Expiration Date
2025-07-10
Description
used to relieve allergy symptoms such as runny nose.
Type
ALLERGY & CONGESTION
Dosage
100mg
Price
13
Update Medication

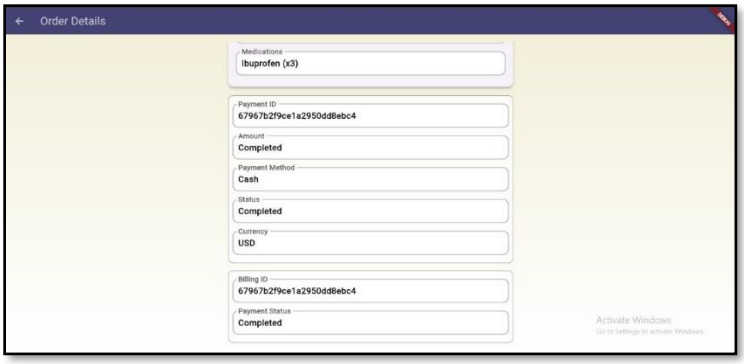






4. Order list screen:

Figure 132 website order list screen



5. Management list screen

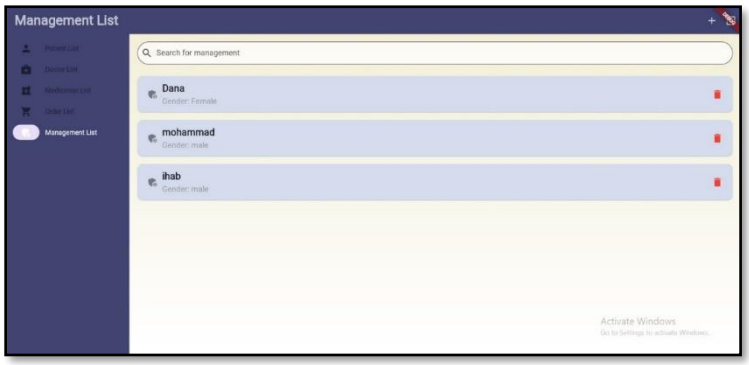
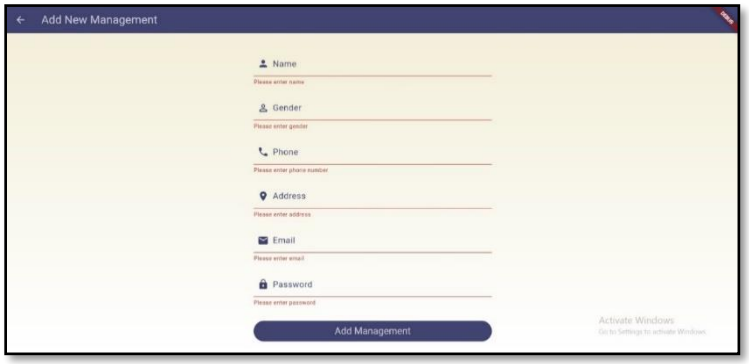
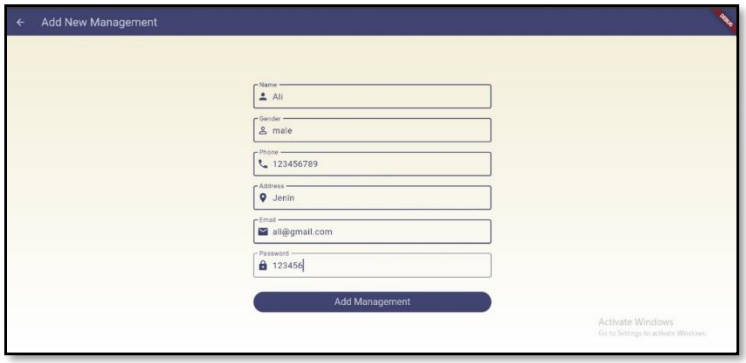
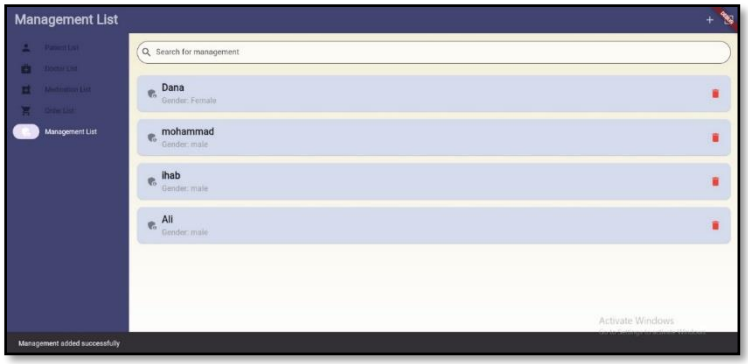
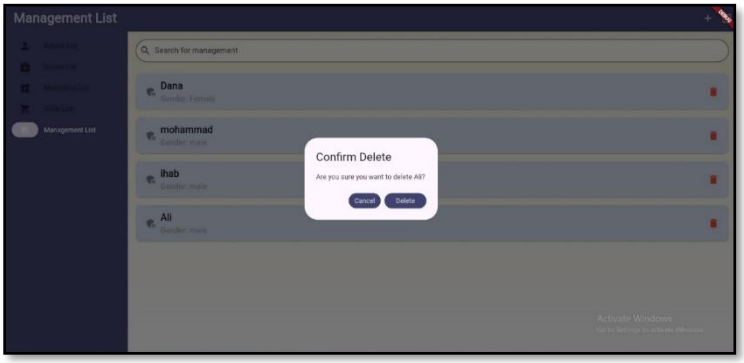


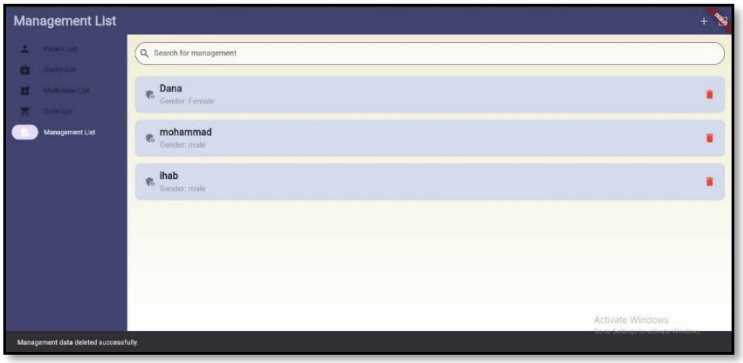
Figure 133 website management list screen




Add New Management
Name
Ali
Gender
male
Phone
123456789
Address
Jenin
Email
ali@gmail.com
Password
123456
Add Management


Management List
Search for management
Dana
Gender: Female
mohammad
Gender: male
ihab
Gender: male
Ali
Gender: male
Management added successfully


Management List
Search for management
Dana
mohammad
ihab
Ali
Confirm Delete
Are you sure you want to delete Ali?
Cancel
Delete


Management List
Search for management
Dana
Gender: Female
mohammad
Gender: male
ihab
Gender: male
Management data deleted successfully.

4 Results and Analysis

Results

In assessing the HealUp platform, it is clear that this application achieved some of the most important aspects of the healthcare system, including the accessibility of services, scheduled services, medication, and communication between the patient and the healthcare provider.

In terms of booking appointments, the HealUp application allowed patients to book, edit, and even cancel appointments with great ease. These did significantly reduce patients' in-person visits to healthcare facilities for appointment setting. The platform made certain that appointments were serviced efficiently to minimize errors or overlaps in times.

In the realm of medication access, the application was very useful for several groups of patients, particularly in rural or other remote regions. Patients were ready to search and order medications they needed without considering the barriers of location or missing availability. Once integrated with pharmacies, it made the application easy to order and deliver to the patients on time, which enhanced the patient experience in obtaining the prescriptions.

As patients interfaced with the healthcare professionals, ChatBot and real-time chat engagement features encouraged a more active relationship. The use of messaging facilitated real-time communication for more productive consultations as well as for effective follow-up conversations. In addition, the ChatBot was helpful in directing patients to the appropriate specialists for their symptoms.

On the other hand, the system was functioning effectively, albeit with some slight lags in the medication search function’s response time in high volume periods. These problems were fixed and further work was to be done on these issues so that better performance was achieved with larger volumes of traffic. There were also a few lags while real-time chat conversations were taking place, which hampered real-time responses to calls. However, these gaps in the appointment schedules did not affect the overall experience of the users.

Analysis

The analysis of the collected data emphasizes the significant improvements that HealUp has brought to the healthcare experience by addressing key challenges such as appointment scheduling, medication access, and communication between patients and healthcare providers.

- **Appointment Booking Efficiency**

The appointment booking system offered by HealUp has proven to be effective in automating the scheduling process. Patients booking, rescheduling, and cancelling appointments may sytematically lead to reducing the burden of having to visit the clinic for scheduling. Therefore, this enhancement has led to better utilization of time both for patients and service providers. Further, the convenience this system affords enhances the overall experience of the patient by enabling modifications to be done to the appointments without too much trouble.

- **Enhanced Medication Accessibility**

For most patients located at the periphery or the deep rural areas, one of the appealing advantages of HealUp is the elimination of barriers to access medication. The platform empowers the users to search and order for the required medicines, irrespective of their geographical location and the associated factors. The linkage with the pharmacies also ensures that there is prompt delivery of medications which is a great challenge within the healthcare system. This capacity has greatly improved the ease and certainty to access the medications.

- **Communication Improvements**

The real-time communication capabilities such as live chat and ChatBot features have contributed enormously towards improving the patient and doctor communication. These tools grant instant access to healthcare professionals, increasing the amount of information exchanged during consultations and follow-ups. The ChatBot technology assists patients in selecting specialized professionals according to their symptoms and makes the care more efficient and customized.

Such means of communication have created more active patients who are more participative with their health care activities.

- **System Performance and Optimization**

The minor issues revolving around appointment booking errors and latencies within the medication search feature have been acknowledged and are being actively worked on. There has been an error around 4% in appointment setting and a 3 second latency after the search has been in progress. These values will be optimized within future updates for a more seamless and quicker user interface.

5 Discussion

The HealUp platform has proven to be a promising solution to several longstanding challenges in healthcare accessibility, particularly in terms of appointment scheduling, medication access, and communication between patients and healthcare providers. Through the successful integration of technology, HealUp has simplified these processes and made healthcare more accessible to a broader audience. However, there are areas that require further refinement.

- **Problem Resolution**

The core issue in the heelup precise market was patients obtaining timely appointments with healthcare providers and having access to medications in rural and remote areas. The findings of the platform evaluation indicate that The HealUp application was able to address these problems effectively. The appointment system enables patients to schedule, change, or cancel appointments without travelling to the healthcare facilities, and has entirely eliminated the need for physical visits. Likewise, the value of the medication access feature has been particularly important for patients that have difficulties obtaining medications because of where they are located.

While some of these barriers have been lifted, others still remain which suggest that some adjustments to the system – for instance, the speed of medication searching and appointment scheduling – still need to be made. These are the constraints that we recognize and try to solve via resourceful techniques that are in progress.

- **Contributions**

Using an integrated mobile app and web platform HealUp has made communication in Healthcare simpler. It allows patients to schedule appointments, receive prescriptions, and request medication online, making the traditional healthcare system extremely convenient and time-efficient. The addition of live chat features such as ChatBot also aids in improving the communication between the patients and doctors for better understanding and a more personalized approach to healthcare. The app has also proven beneficial to doctors and other healthcare professionals by assisting them with appointment scheduling, patient histories, communication, and overall work flow efficiency.

The additional integration of pharmacies into the platform in the form of medicine ordering and delivery services tackles a much wider issue of inadequate medical services in specific areas of focus. The effective management of healthcare logistics is reinforced by the smooth database operations and protection of confidential information including but not limited to patients' records and prescriptions.

- **Logical Implications of Results**

Here, significant attention is paid on the periphery of the Heal Up case telemedicine's accessibility and efficiency within the context of the healthcare system at large. HealUp's development facilitating remote appointment scheduling and medication dispensing is, in fact, parallel to advances in the field of telemedicine and digital healthcare. These technologies are redefining how certain issues such as healthcare accessibility and quality of care are crafted throughout the world. The deployment of these technologies is undoubtedly HealUp's most significant contribution. Their application would shift some of the workload from service providers while also encouraging self-care on the side of the patients.

Moreover, the seamless integration of real-time communication with HealUp is yet another encouraging sign of the evolution of modern healthcare from passive to more active and proactive patient engagement, resulting in better, more responsive patients and services. This kind of engagement is essential in strengthening the bond between the patients and healthcare services which is fundamental in improving patient satisfaction and healthcare outcomes.

- **Further Study and Applications**

Although HealUp made remarkable improvements with regard to the patient experience, there is still a lot of work to be done. In the future, research may be conducted on how the platform operates during the busiest periods, which would help with the minor lags that were mentioned earlier in the searching and reservation procedures. Moreover, the ChatBot component could be further developed by integrating AI and machine learning for better suggestions for specialists and diagnoses.

In addition, the healthcare experience would greatly improve and become even more accessible to patients that cannot come to healthcare establishments if the platform was expanded to include telemedicine features, such as the ability to do video calls with doctors. It would also seem logical that in addition to broadening the scope of services, their mental health or preventative healthcare support services would also follow the same aim of providing better healthcare accessibility and quality, which is the basis of HealUp's objectives.

6 Conclusion and Recommendation

Conclusion

HealUp’s unique design and feature set were used to solve important issues with health care access and efficiency. The application focused on physician-patient intermediary functions and user-friendly features, which facilitated safe and effective healthcare delivery. The project went further and illustrated the potential for technology to enhance healthcare services through the integration of different systems in a manner that is beneficial to everyone.

What we have learned

- We learned to use the flutter and the node-js to build a complete application.
- The correct use of mongo Database and the use of firebase storage to solve problems with pressure on databases.
- We learned how to do notification by using firebase.
- We know how to deal with map features (tracking and analysis) and learn strategies for handling GPS inaccuracies and testing location-based features.
- We learned how to solve some problems using Lookup Table when there is no general condition.

Future Work

- Multilingual Support :

Improve the application by adding the Arabic language to better serve Arabic-speaking people and making the app more user-friendly and approachable for a wider audience.

- Digital Wallet Integration:

Add the digital wallet feature to allow paying more easily. When the patient is onboarded, a set amount to their credit card needs to be deducted and kept in their wallet. For each transaction made after that, the amount needed will be subtracted straight from the wallet, ensuring card details do not have to be entered at every transaction. Also, if an appointment gets cancelled, a small fee will be charged for the service as deposit.

- Expanded Database:

Increase the application's database by incorporating more healthcare facilities across different regions. This will allow for more doctors and services to be added to the platform which will make it more reachable and usable to a greater number of patients.

- Accessibility Improvements:

Better conform to accessibility standards to assist patients with disabilities better.

- AI Enhancements:

Add more complex models of machine learning rather than the already existing basic ones for more accurate diagnosing of symptoms and creation of treatment plans.

7 References

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