User Manual – My Health Tracker

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1 How to Run the App

1.1 Prerequisites

Before running the application, ensure that the following requirements are met:

1. **Python (version 3.x)** and **Node.js (version 16.x or higher)** must be installed on your system.
2. All required dependencies and libraries should be installed in the development environment.
3. The project files, including the script `run_servers.sh`, must be located in the root directory of the project.

1.2 Steps to Run the App

1. Open the **Command Prompt (cmd)** and navigate to the root folder of the application.
2. Run the following command based on your operating system:
   - **For Windows:**

     ```
     ./run_servers.bat
     ```

   - **For Linux:**

     ```
     ./run_servers.sh
     ```

Once executed, the script will start both **back-end and front-end servers**, and the application will automatically open in your default web browser at: **http://localhost:3000/**

1.3 Stopping the Servers

To stop the servers, follow these steps:

1. Return to the **Command Prompt** where the script is running.
2. Press **Ctrl + C** to terminate the process.

1.4 Troubleshooting

1.4.1 Using Git Bash Instead of Command Prompt

If you have problems running the script in Command Prompt, try using **Git Bash** instead.

1.4.2 Error: "Port already in use"

If you see a message indicating that a port is already in use:

- Ensure that no other applications are running on ports **5001** (back-end) or **3000** (front-end).

1.4.3 Log Errors

To diagnose issues:

- Check the logs in the terminal where the script is running for detailed error messages.

2 Log In

To log in to the application, follow these steps:

1. Open the application in your browser at **http://localhost:3000/**.
2. Enter your **username** and **password** in the respective input fields.
3. Click on the **Login** button.
4. If your credentials are correct, you will be redirected to the main dashboard at: **http://localhost:3000/mainpage**
5. If you do not have an account, click on **"Create New Account"** to sign up.

   For convenience, we have provided some test users in the "Test Accounts" section to help you check the app.

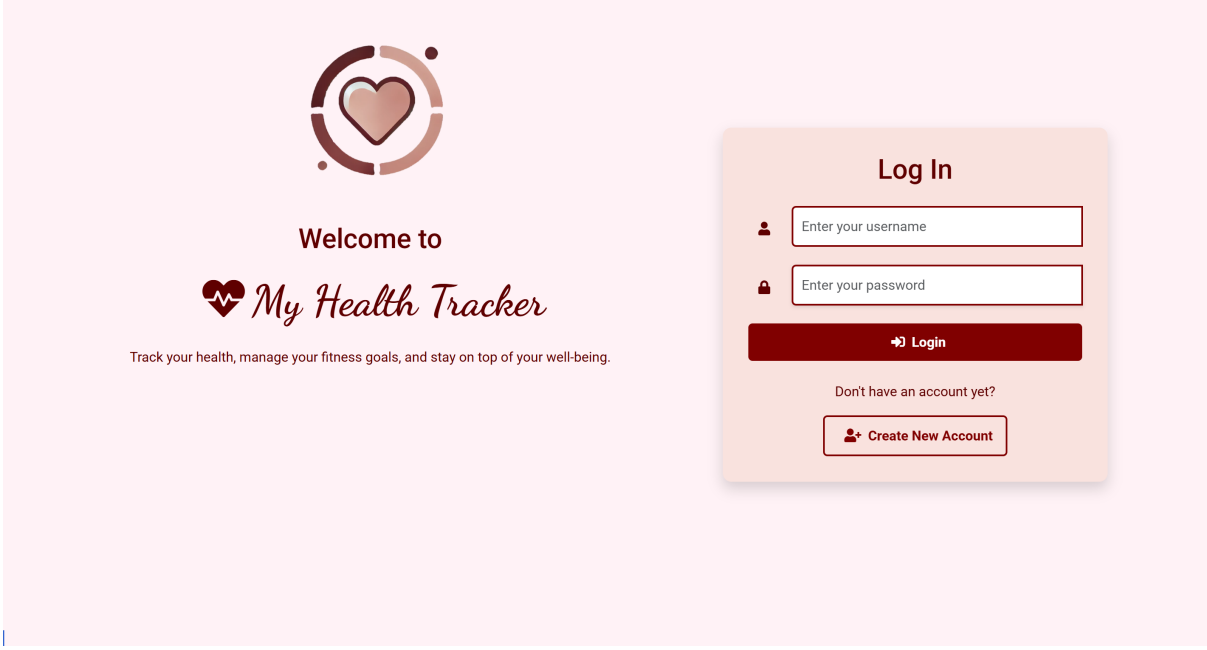

Figure 1: Login Page.

3 Sign Up

To create a new account, follow these steps:

1. Click on **"Create New Account"** on the login page.
2. Fill in the required details:

- **Username** – must be unique and not already registered in the system.
- **Password** – must be between **8 and 20 characters**.
- **Confirm Password** – must match the password.
- **Date of Birth** – required. field is used to calculate the user's age for analysis purposes in the application.
- **Height and Weight** – required. fields must be entered in centimeters and kilograms.
- **Gender** – required.

3. All fields are mandatory.
4. Click on the **"Sign Up"** button to complete the registration process.
5. If registration is successful, you will be redirected to the main page of the application at: **http://localhost:3000/mainpage**.

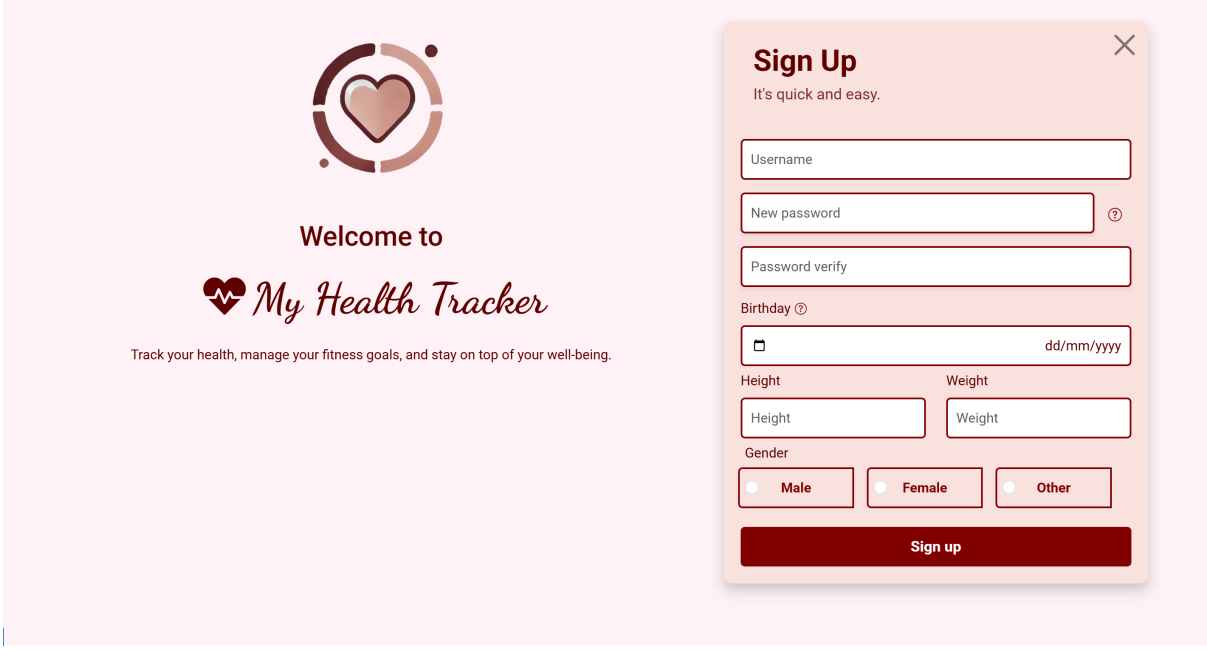

Figure 2: Sign Up Page.

4 Dashboard Overview

4.1 Health Summary

The **Health Summary** panel provides an overview of the user's most recent test results. Each test result is presented in a structured format, including:

- **Test Name** – The title of the test (e.g., "Pre-meal Blood Glucose" and "Systolic Blood Pressure").
- **Graphical Representation** – A horizontal bar representing the typical range for the test, along with:

- A **black marker** indicating the lower and upper reference limits based on global standards and adjusted according to your age group.
- A **colored dot** showing the user's recorded value.
- A **color-coded indicator** for result interpretation:
  - **Green** – Normal range.
  - **Red** – Out of range (potentially high or low).

- **Last Test Date** – The date when the test was last recorded.
- **Follow-up Notification** – If a test is due for a re-evaluation, a notification will appear:
  - **"It is time for a follow-up test."** - Suggest that the user should consider another test soon.
  - **"out of range!"** - a warning if the test value is outside the normal limits.

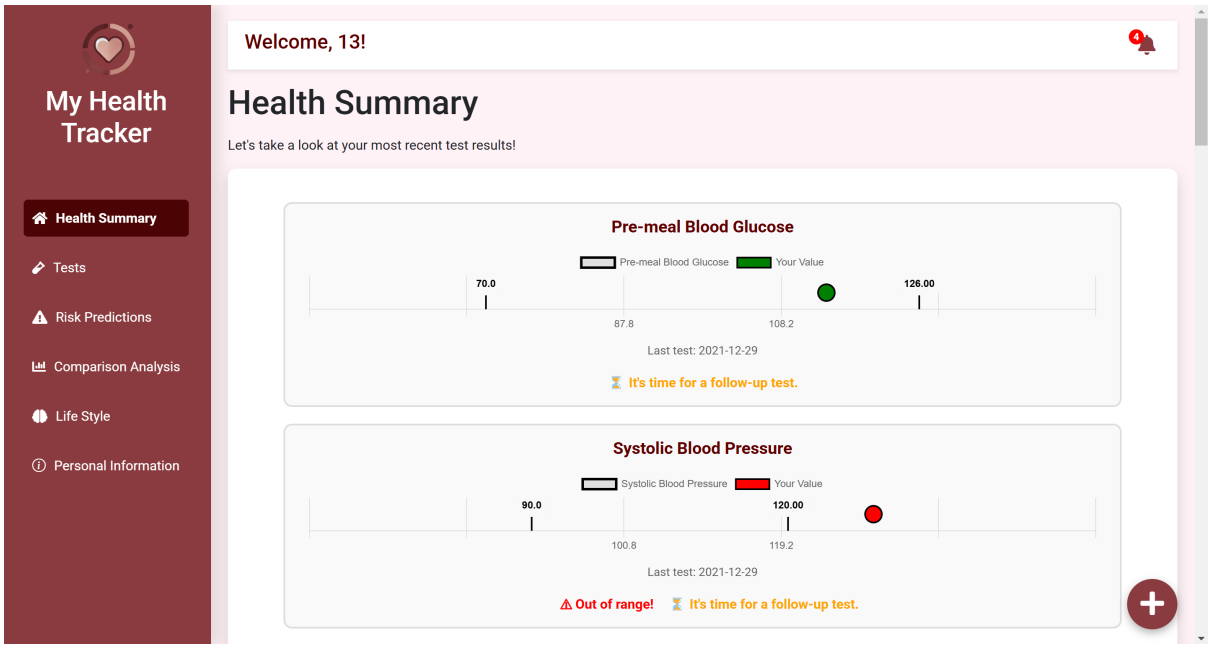

Figure 3: Health Summary with test results.

4.2 Notification Bell

At the top-right corner of the dashboard, the notification bell provides alerts about abnormal test results. The bell displays a red number that indicates the number of unresolved alerts.

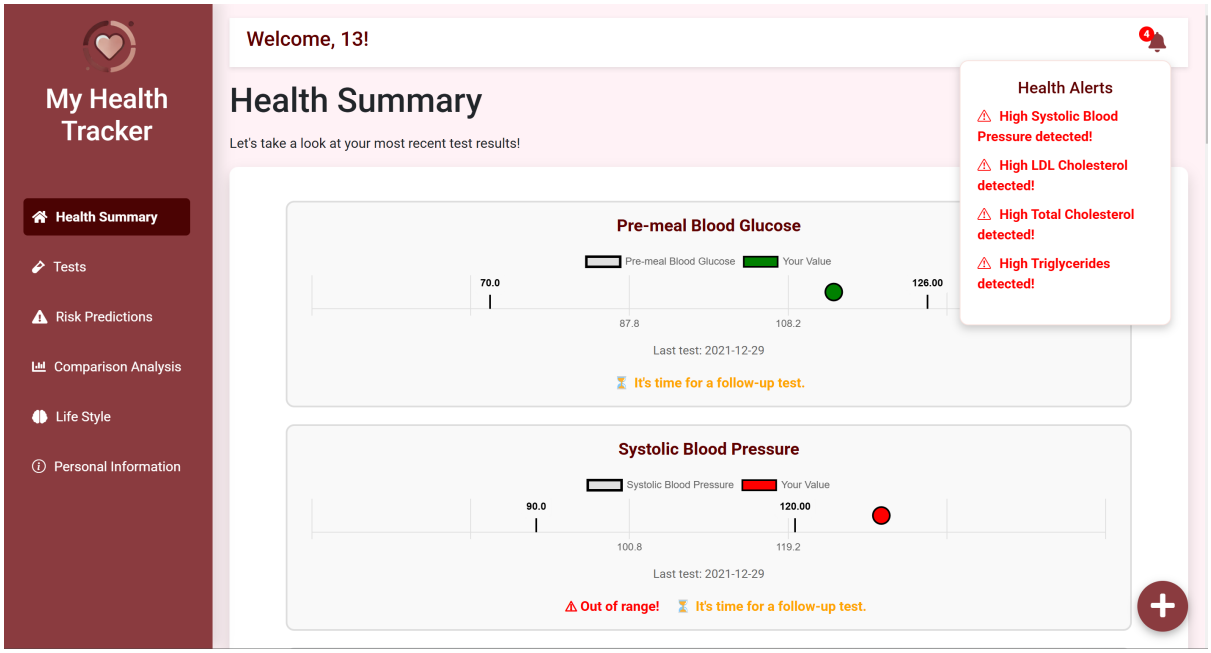

Figure 4: Notification bell displaying alerts.

If no tests have been added yet, the system will display a ”no recent tests available” massage.

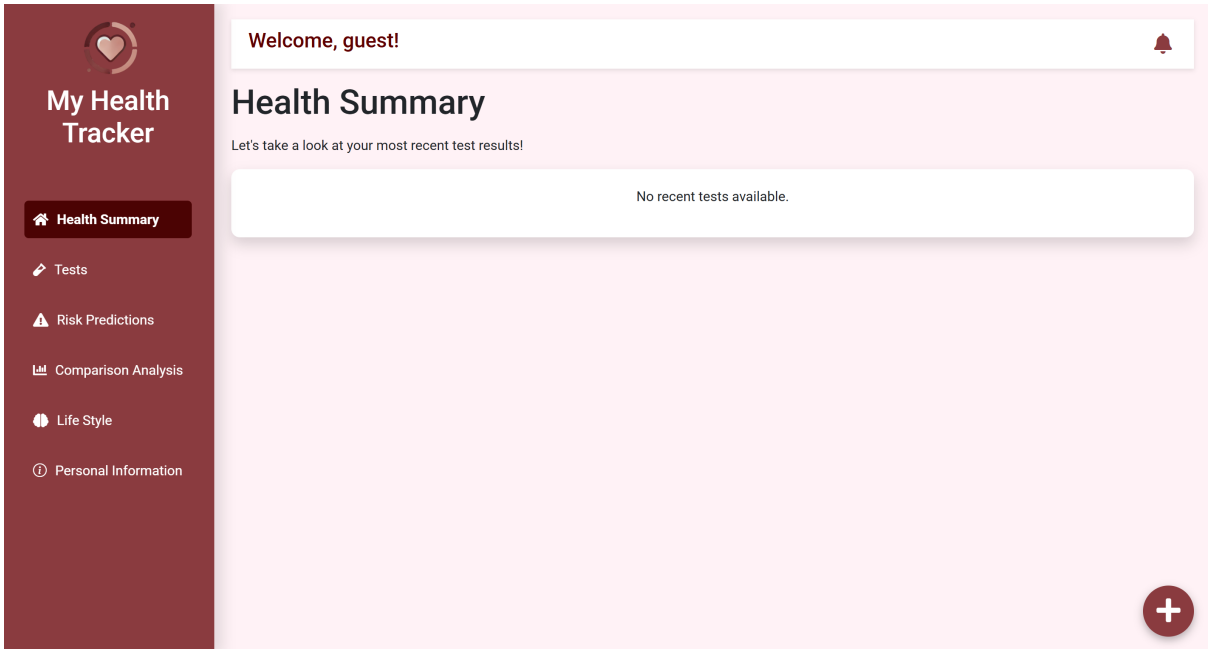

Figure 5: No recent tests available.

To add a new test result, click the **plus button** on the bottom-right and enter the required details.

4.3 Add Tests

When clicking the plus button, a form appears where users can enter:

- **Test Name** (from a list).

- **Date** the test was performed.
- **Test Value** (numerical result).

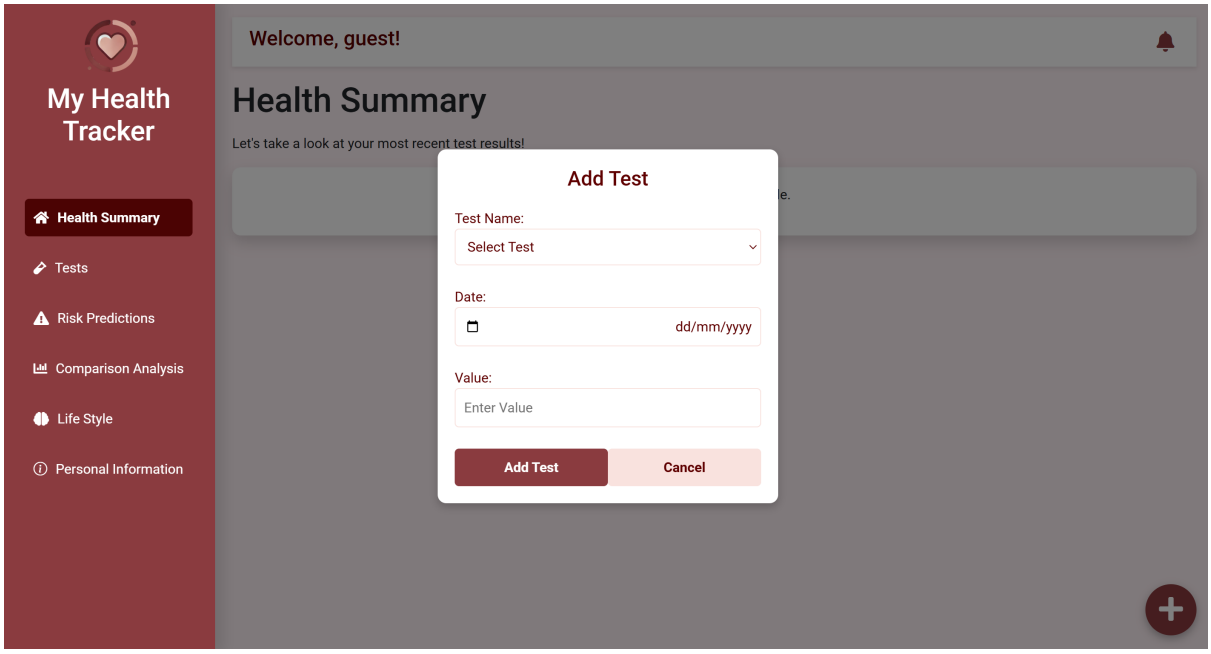

Figure 6: Test Entry Form.

After adding a test, a confirmation message appears at the top of the screen, indicating that the test has been successfully added. However, to see the most recent results, the page must be refreshed.

Note - Each test can have only one value per day. This means that it is not possible to enter multiple different values for the same test on the same date.

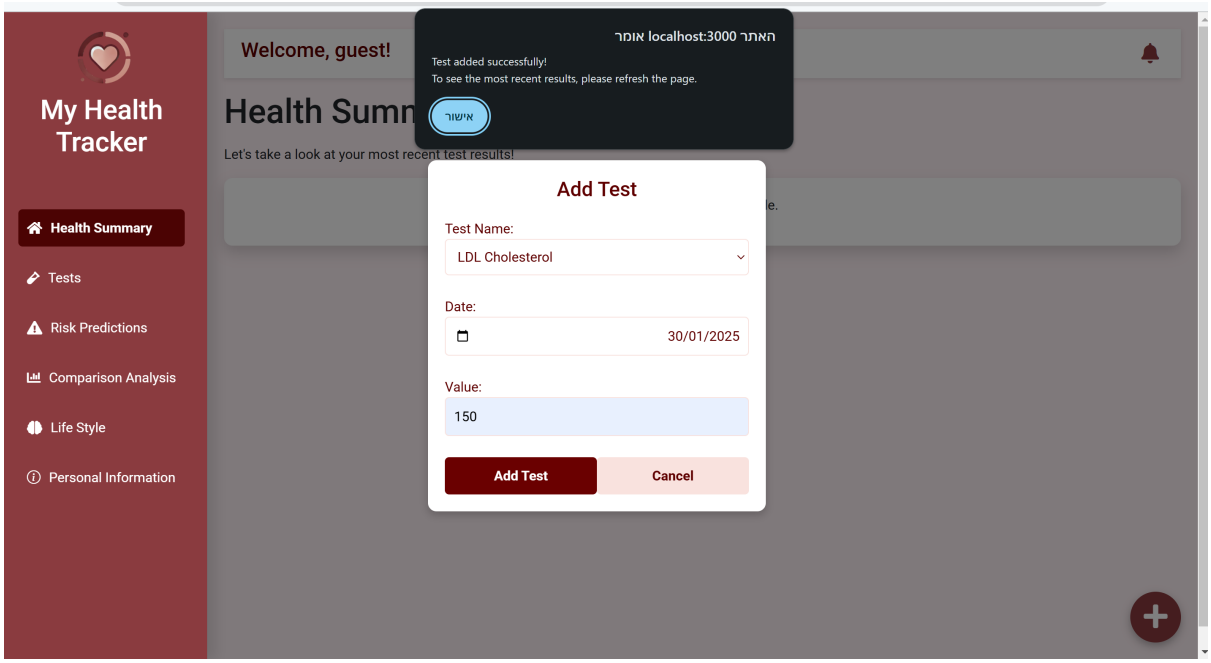

Figure 7: Test successfully added! Please refresh the page to see the most recent results.

Quick Access Feature

You can add a new test from **any screen** in the application by clicking the plus button located in the bottom right corner. This ensures quick and easy test updating without navigating away from your current section!

5 Tests

The **Tests** section allows users to track and analyze medical test results over time.

5.1 Test Overview

Each test entry is displayed graphically, showing:

- A trend line represents the test values recorded over time.
- A blue line indicating the minimum acceptable range.
- A red line represents the maximum acceptable range.

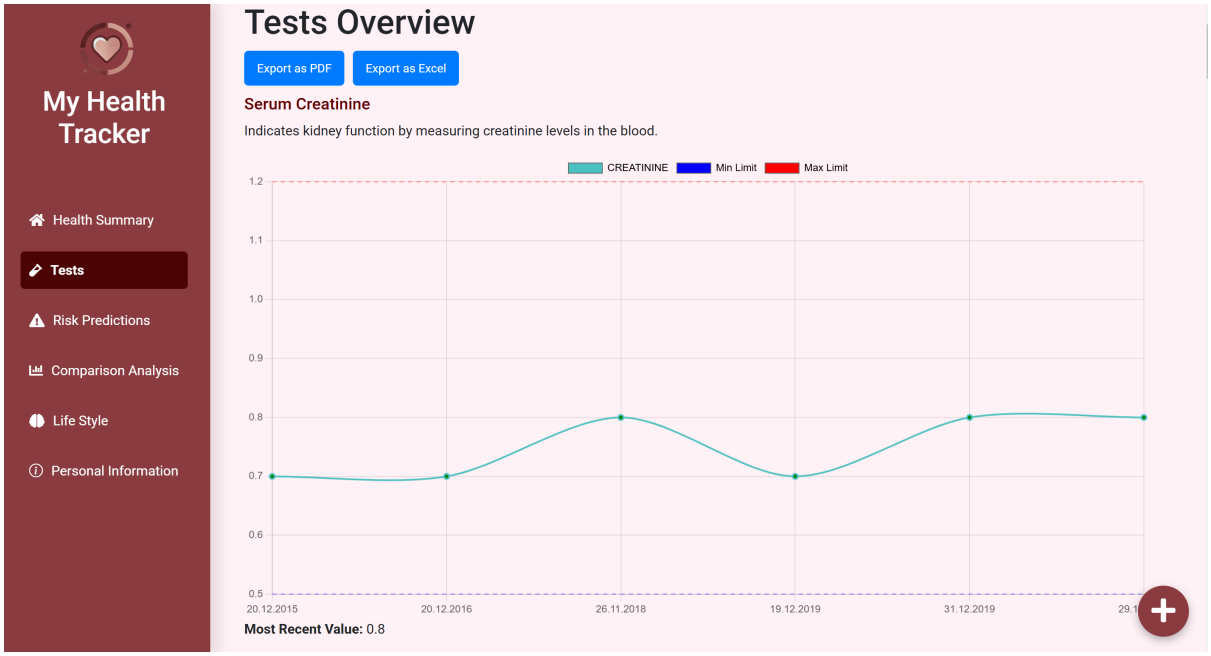

Figure 8: Tests Overview - Serum Creatinine levels over time.

- Only tests that have at least one recorded result will be displayed.
- If no test results are available, the section will appear empty.
- The upper and lower limits of test values are determined based on global reference ranges for your age group.

5.2 Exporting Test Data

you can export your test results in two formats:

- **PDF** – Suitable for printing and sharing with doctors.
- **Excel** – For advanced data analysis and tracking.

6 Risk Predictions

The **Risk Predictions** section provides insights into potential health risks based on your test results and lifestyle data. If there is no lifestyle data, you can click on ”Fill lifestyle questionnaire” and fill the questionnaire displaying on ”Lifestyle Questionnaire” tab.

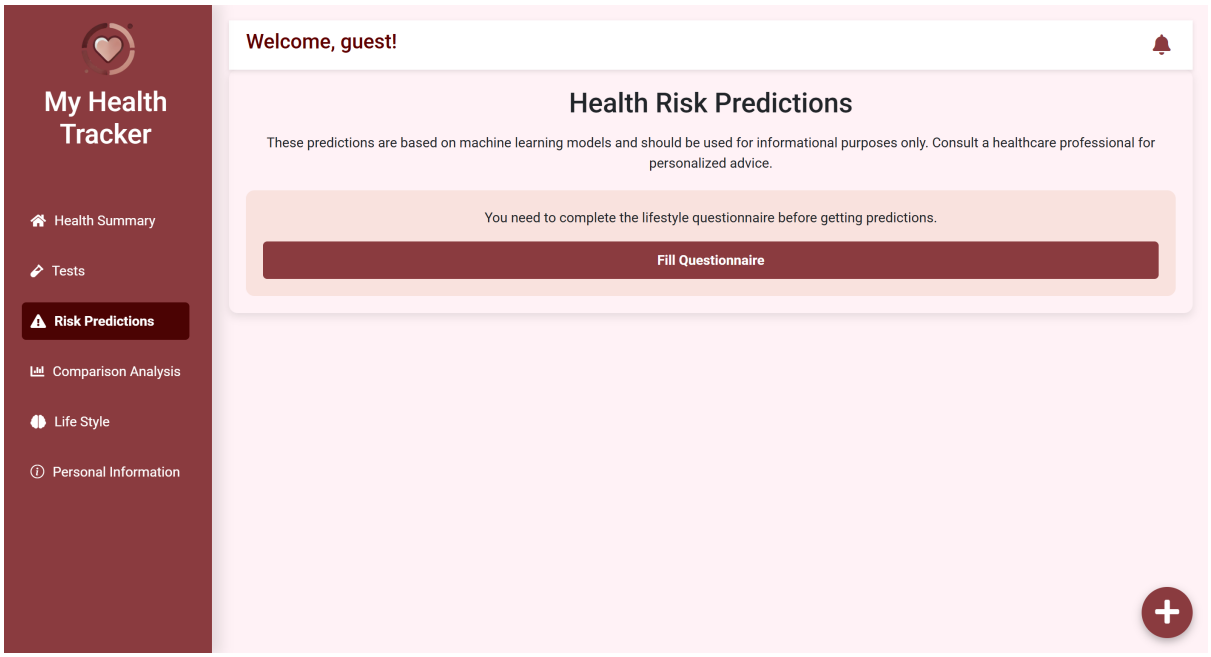

Figure 9: No lifestyle data available.

The following predictions are available:

6.1 Heart Disease Risk

This model evaluates heart health based on your lifestyle information and blood pressure (BP_HIGH, BP_LWST), cholesterol levels (TOT_CHOLE, LDL, HDL), and blood glucose levels (BLDS).

6.2 Stroke Risk

The stroke prediction model considers your lifestyle information and blood pressure (BP_HIGH, BP_LWST), blood glucose levels (BLDS) and cholesterol levels.

6.3 Diabetes Risk

The diabetes prediction model evaluates blood sugar levelsbased on your lifestyle information and blood glucose levels (BLDS), blood pressure (BP_HIGH, BP_LWST) and total cholesterol (TOT_CHOLE).

6.4 Depression Risk

The depression risk prediction model assesses your likelihood of experiencing depression based on your lifestyle data.

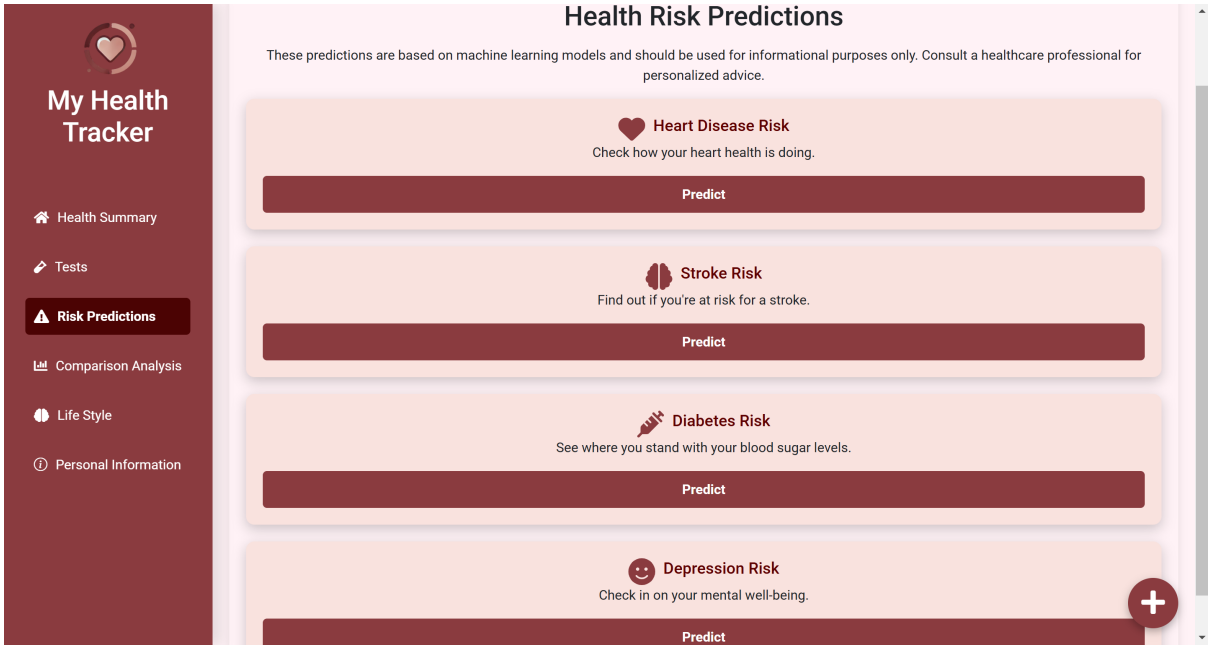

Figure 10: Risk Prediction Models.

If required tests are missing, an error, massage will be displayed.

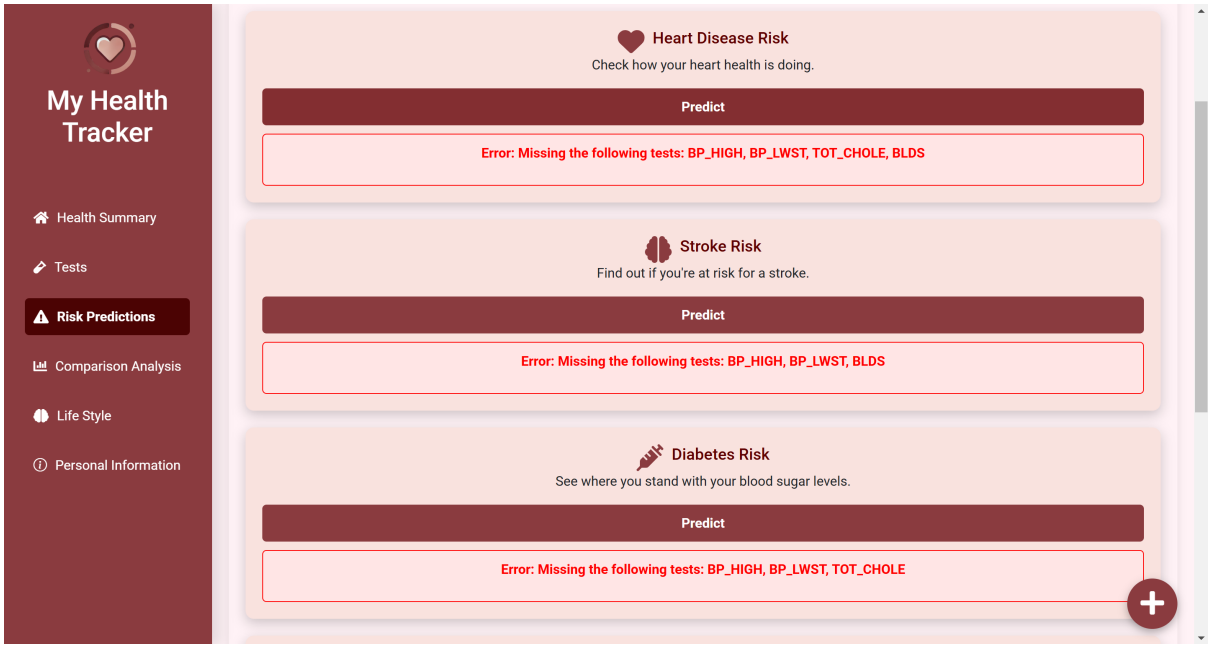

Figure 11: Error: Required test results are missing.

6.5 How to Use Risk Predictions

To generate a prediction:

1. Go to **Risk Predictions**.
2. Select a risk category (e.g., "Heart Disease Risk").
3. Click **"Predict"**.
4. View the risk percentage and suggested health improvements.

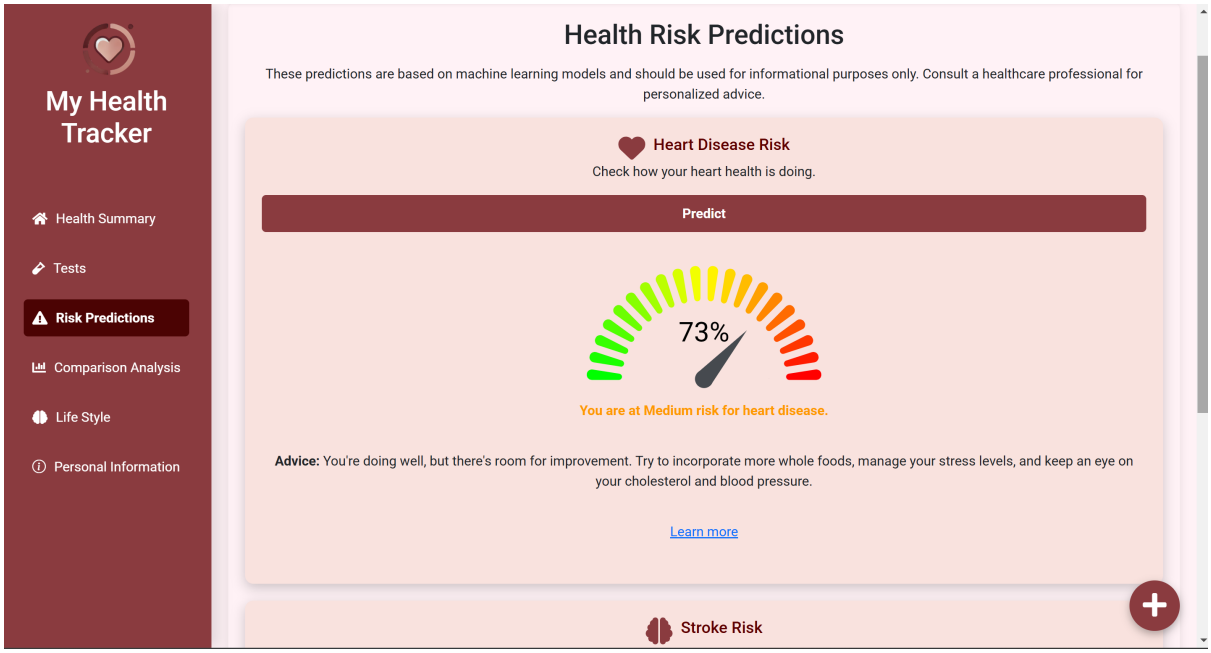

Figure 12: Heart Disease Risk Prediction.

Clicking on "Learn More" will redirect you to a website with additional information and advice.

6.5.1 Risk Levels

The risk level is determined based on the probability score, categorized as follows:

- **Low Risk:** Probability between 0% and 49%.
- **Medium Risk:** Probability between 50% and 79%.
- **High Risk:** Probability between 80% and 100%.

Important Note

The health risk predictions in this application are generated using **machine learning models** and are intended only for **information purposes**. These predictions may contain inaccuracies and should **not** be used as a substitute for professional medical advice, diagnosis, or treatment. Always consult a **qualified healthcare professional** before making any health-related decisions.

7 Comparison Analysis

The **Comparison Analysis** section allows you to compare your medical test results with data from users who have a similar lifestyle. This feature provides insight into how your test values compare to a broader population with comparable demographics and habits.

Before accessing comparison data, you must complete the **Lifestyle Questionnaire**. This ensures that comparisons are made with a relevant user group. If the questionnaire has not been filled out, the system will display a notification prompting you to complete it.

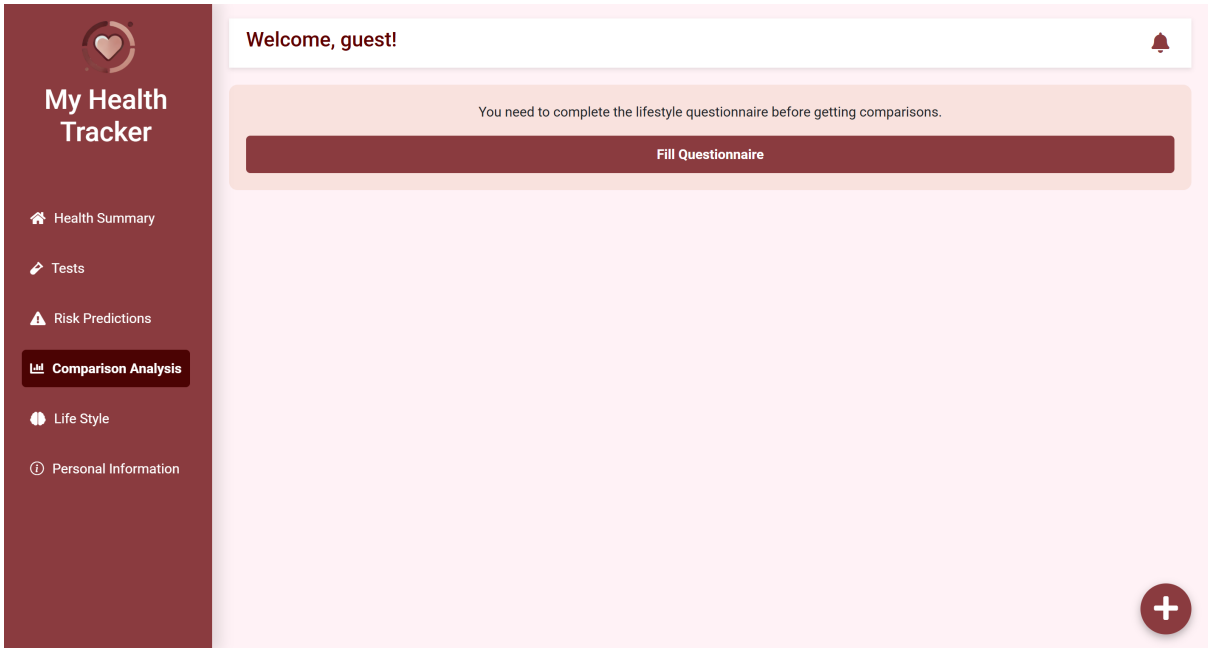

Figure 13: The system prompts users to complete the Lifestyle Questionnaire before enabling comparison analysis.

7.1 Viewing a Comparison

Once the Lifestyle Questionnaire is completed, you can view comparisons for different test results. Each comparison includes:

- A **Histogram** representing the distribution of test values among users in the selected group.
- A **Highlighted Marker** indicating your recent test value on the distribution graph.
- A summary stating whether your value is within the common range, higher, or lower than most users in your group.

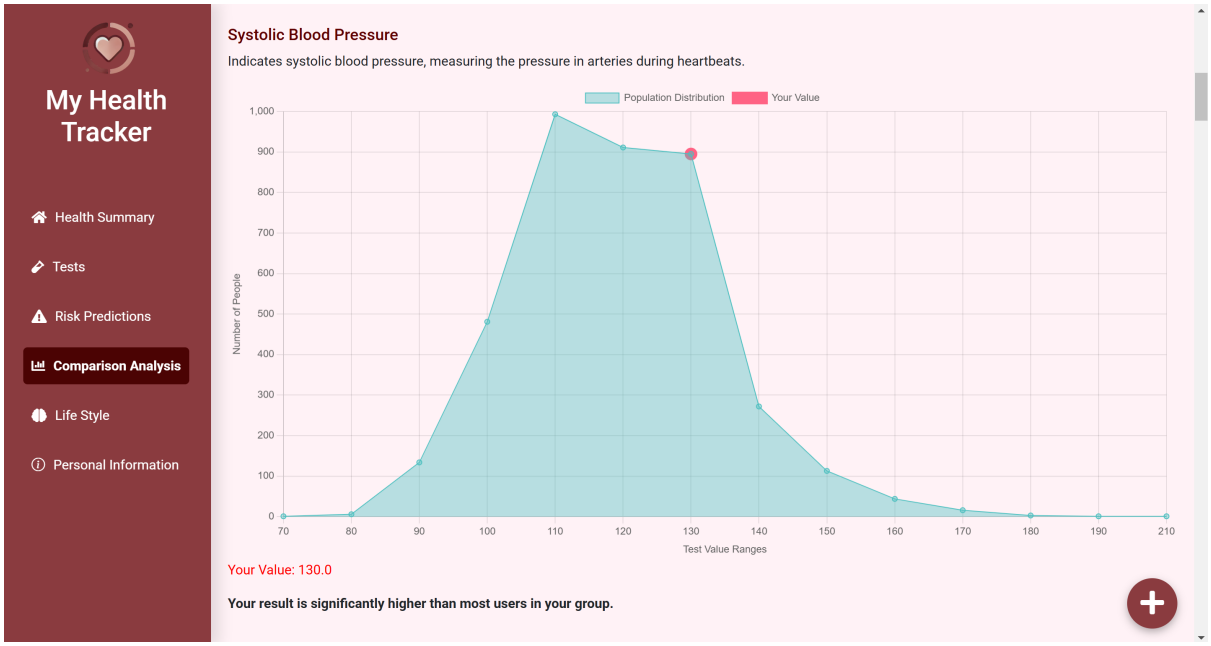

Figure 14: Example: The user's Systolic Blood Pressure value is higher than most users in the comparison group.

7.2 Missing Test Data

If you do not have a recorded value for a specific test, the system will still display the histogram for the relevant population. However, your personal test value will not appear on the chart, and a message will indicate that no user data is available for comparison.

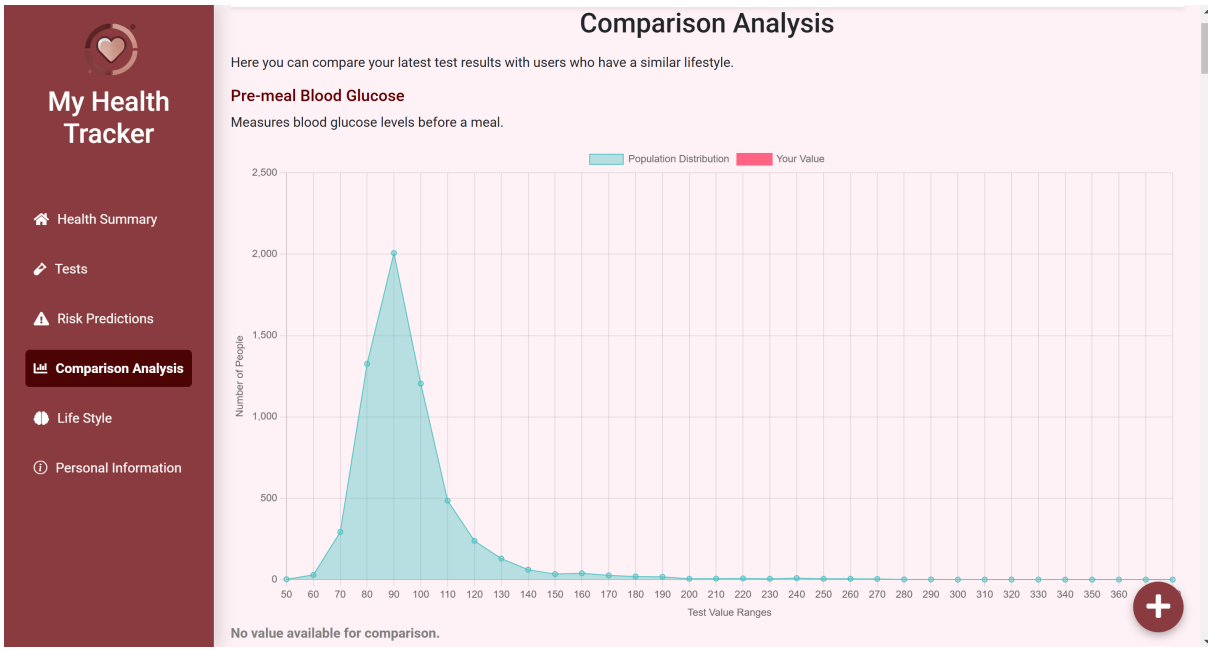

Figure 15: Example: No user value is available for comparison, but the population distribution is still shown.

7.3 Interpreting the Results

The comparison analysis helps you understand how your health metrics align with broader trends. However, results should be interpreted cautiously:

- Being outside the average range does not necessarily indicate a health issue.
- If your test results are significantly different from the average, consult a healthcare professional for further evaluation.
- Use this feature to monitor trends over time rather than as a diagnostic tool.

8 Lifestyle Questionnaire

The **Lifestyle Questionnaire** is an essential part of the application, as it provides the necessary background information for various features such as **Risk Predictions** and **Comparison Analysis**. As mentioned earlier, these sections require a completed lifestyle questionnaire before they can generate results.

8.1 Filling Out the Questionnaire

To access the questionnaire:

1. Navigate to the **Lifestyle** section from the side menu.
2. The displayed form includes multiple fields related to personal habits and demographic details.
3. Click on the **"Edit Lifestyle"** button to modify the fields.
4. Ensure all fields are completed, as partial entries will not be saved.
5. Click **"Save Changes"** to update your lifestyle information.

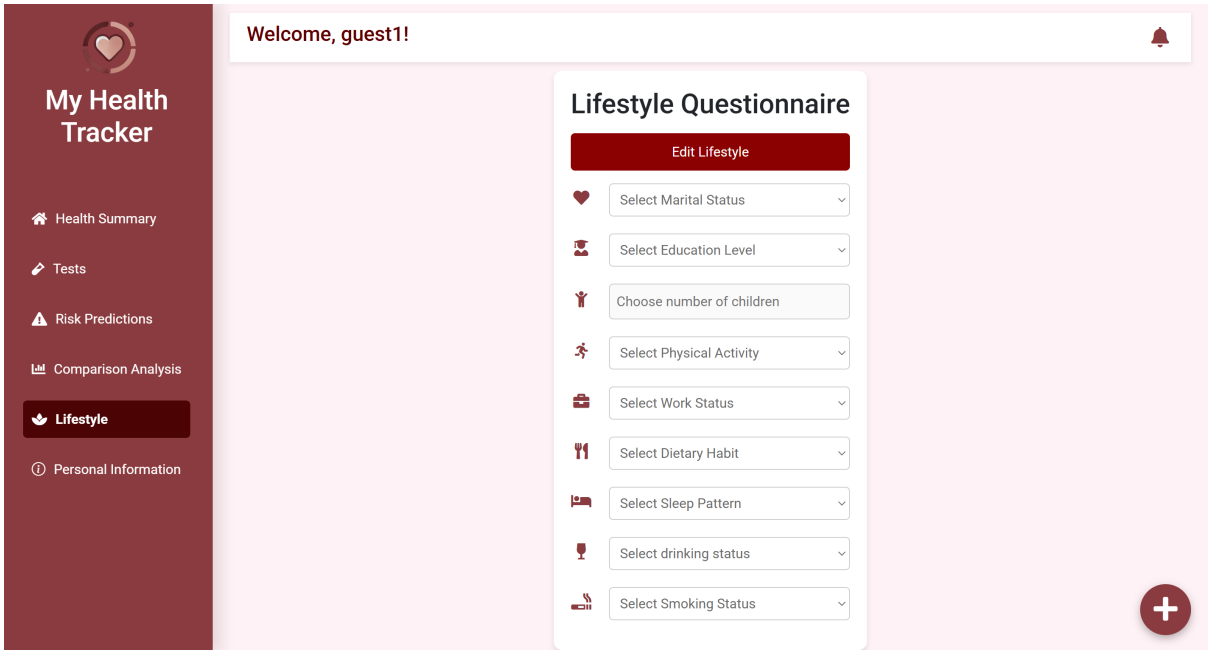

Figure 16: The Lifestyle Questionnaire interface.

8.2 Questionnaire Fields

Each field in the questionnaire has a predefined set of possible. All fields are required. Values that you can choose from:

- **Marital Status:** Single, Married, Divorced, Widowed
- **Education Level:** High School, Associate Degree, Bachelor's Degree, Master's Degree, Doctorate
- **Children:** Numeric field (e.g., 0, 1, 2, etc.)
- **Physical Activity:** Sedentary, Moderate, Active
- **Work Status:** Unemployed, Employed
- **Dietary Habit:** Unhealthy, Moderate, Healthy
- **Sleep Pattern:** Poor, Fair, Good
- **Drinking (Alcohol):** Yes, No
- **Smoking:** Don't smoke, Smoked before but quit, Currently smokes

Important: Ensure all fields are filled out correctly, as missing or incorrect information can lead to inaccurate insights.

After updating and saving your lifestyle details, a confirmation message will appear at the top of the screen, indicating that your lifestyle information has been successfully updated.

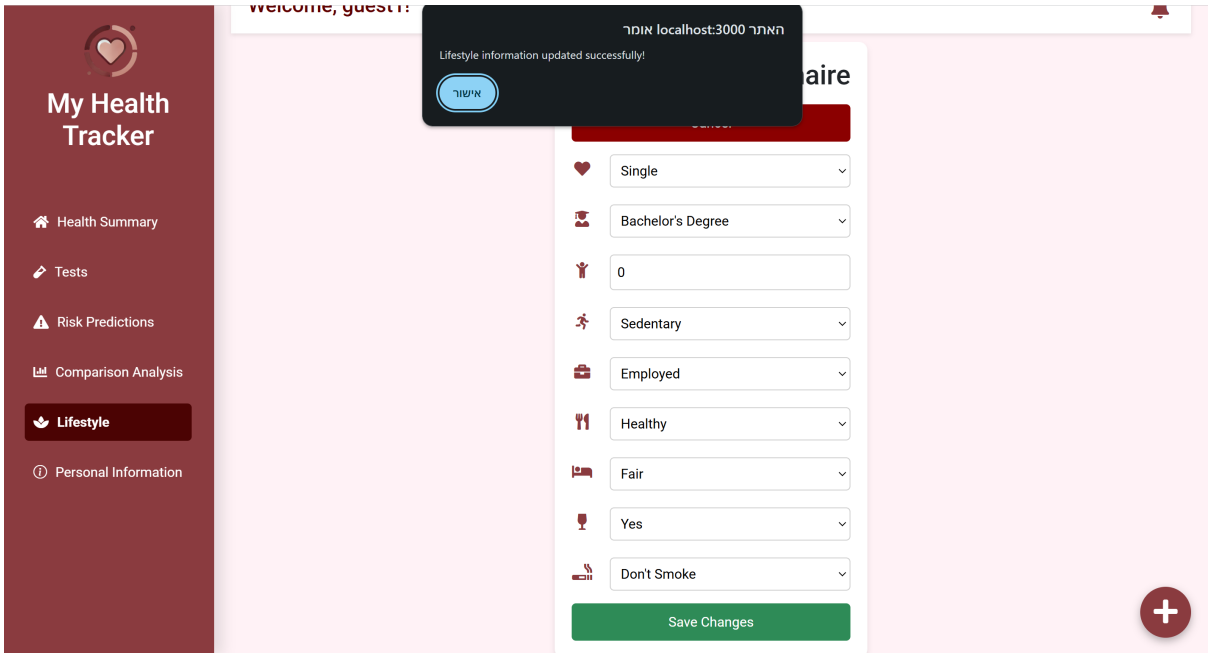

Figure 17: Confirmation message after successfully updating lifestyle details.

9 Personal Information

The **Personal Information** section allows users to view and update specific personal details that are essential for accurate health tracking. The system automatically calculates the Body Mass Index (BMI) based on the user's height and weight.

9.1 Viewing Personal Information

To access your personal information:

1. Navigate to the **Personal Information** section from the side menu.
2. Your details, including **username**, **gender**, **BMI**, **age**, **height**, and **weight**, will be displayed.
3. The **BMI** value is automatically calculated and cannot be manually edited.

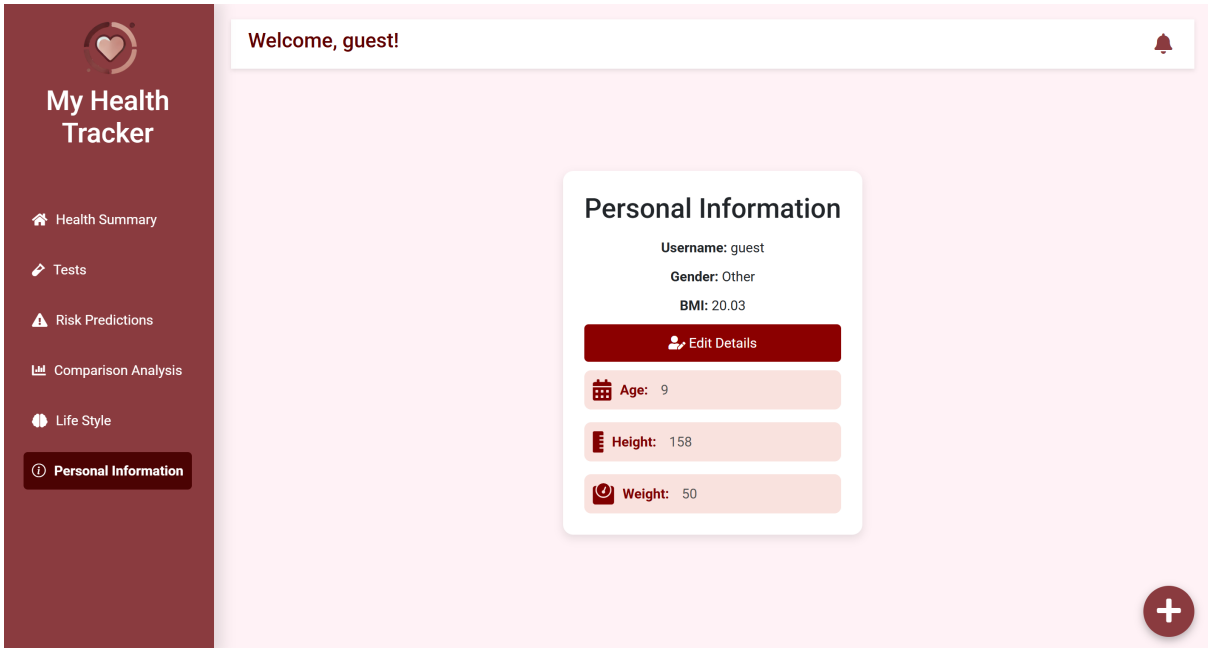

Figure 18: Personal Information Overview.

9.2 Editing Personal Information

Users can update specific details such as:

- **Age**
- **Height** (cm)
- **Weight** (kg)

The **BMI** will be automatically recalculated after any change in height or weight.
To edit personal information:

1. Click on the **"Edit Details"** button.
2. Modify the desired fields.

3. Click on **"Update"** to save changes.

4. A confirmation message will appear once the update is successful.

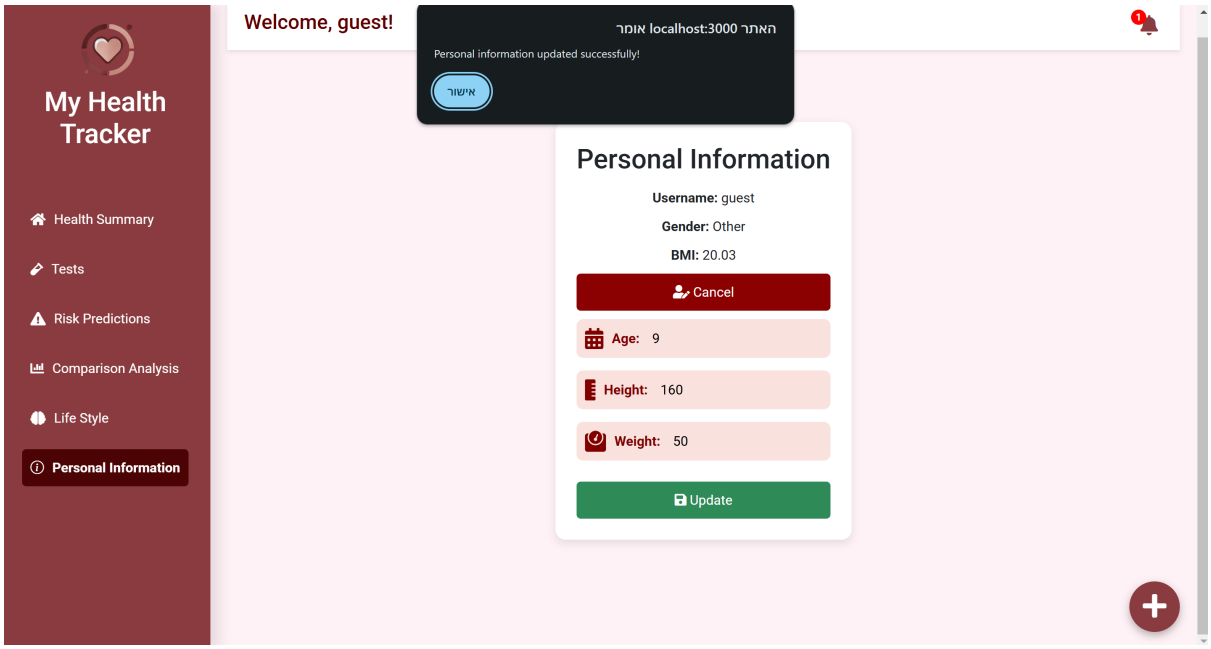

Figure 19: Editing Personal Information.

9.3 BMI Calculation

The **Body Mass Index (BMI)** is calculated using the standard formula:

$$BMI = \frac{\text{Weight (kg)}}{\text{Height (m)}^2} \tag{1}$$

Where:

- Weight is measured in kilograms (kg).
- Height is measured in meters (m).

Note: Since height is entered in centimeters, it is converted to meters by dividing by 100 before applying the formula.

The BMI value is updated in real-time when changes to height or weight are made.

10 Logging Out

To log out, navigate back to: **http://localhost:3000/**

Now you can log in to a different account or create a new one!

11 Test Account

This section is intended for testers who need quick access to pre-existing user accounts. The system contains half a million test users, making it easy to log in without manual registration.

11.1 How to Access a Test Account

To log in as a test user, use the following credentials:

- **Username:** Any number between **1 and 500,000**.
- **Password:** `pass` followed by the same number as the username.

11.2 Example Credentials

- Username: **12345**
- Password: `pass12345`

11.3 Notes for Testers

- Each test account already contains pre-recorded health data from the database.
- Test accounts provide access to all app features, allowing for full functionality testing.

12 Conclusion

My Health Tracker is designed to help users monitor their health, track test results, and gain insights through personalized analytics. This manual provides detailed guidance on using the application, from logging in to analyzing health trends.

For testers, a vast set of test accounts is available for validating functionalities. Users can seamlessly navigate between features such as risk predictions, comparison analysis, and test history tracking.

Please remember that all health insights provided by the app are based on data analytics and machine learning models; they are not a substitute for professional medical advice. Always consult a qualified healthcare provider for accurate diagnosis and treatment.

If you encounter any issues or require further assistance, refer to the troubleshooting section or contact support.

We hope you find My Health Tracker a valuable tool for managing your health effectively!

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