

Carbs Buddy

Carbs Buddy is a diabetes management application focused on helping individuals improve their eating habits and to keep track of their nutritional intake.

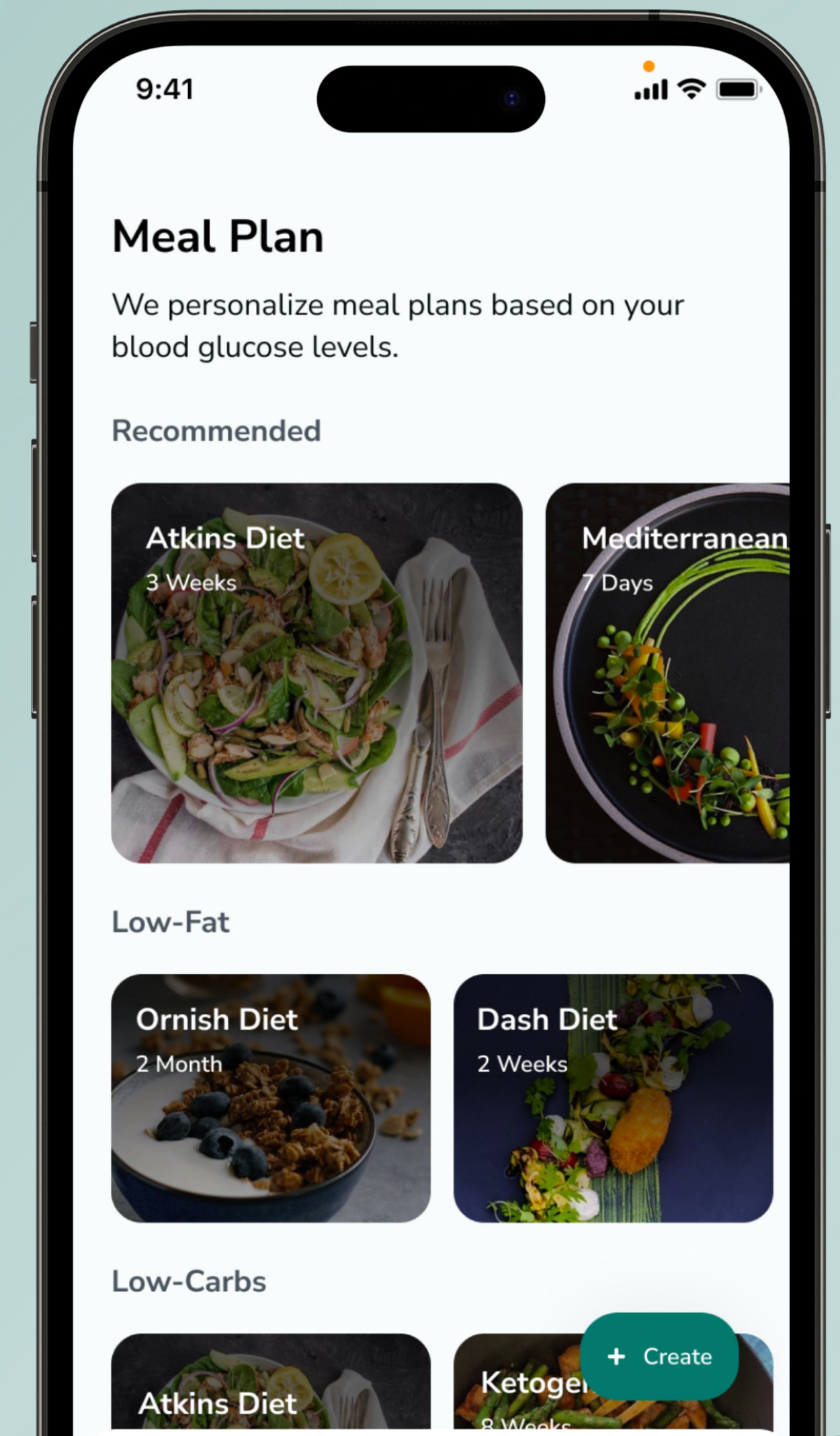
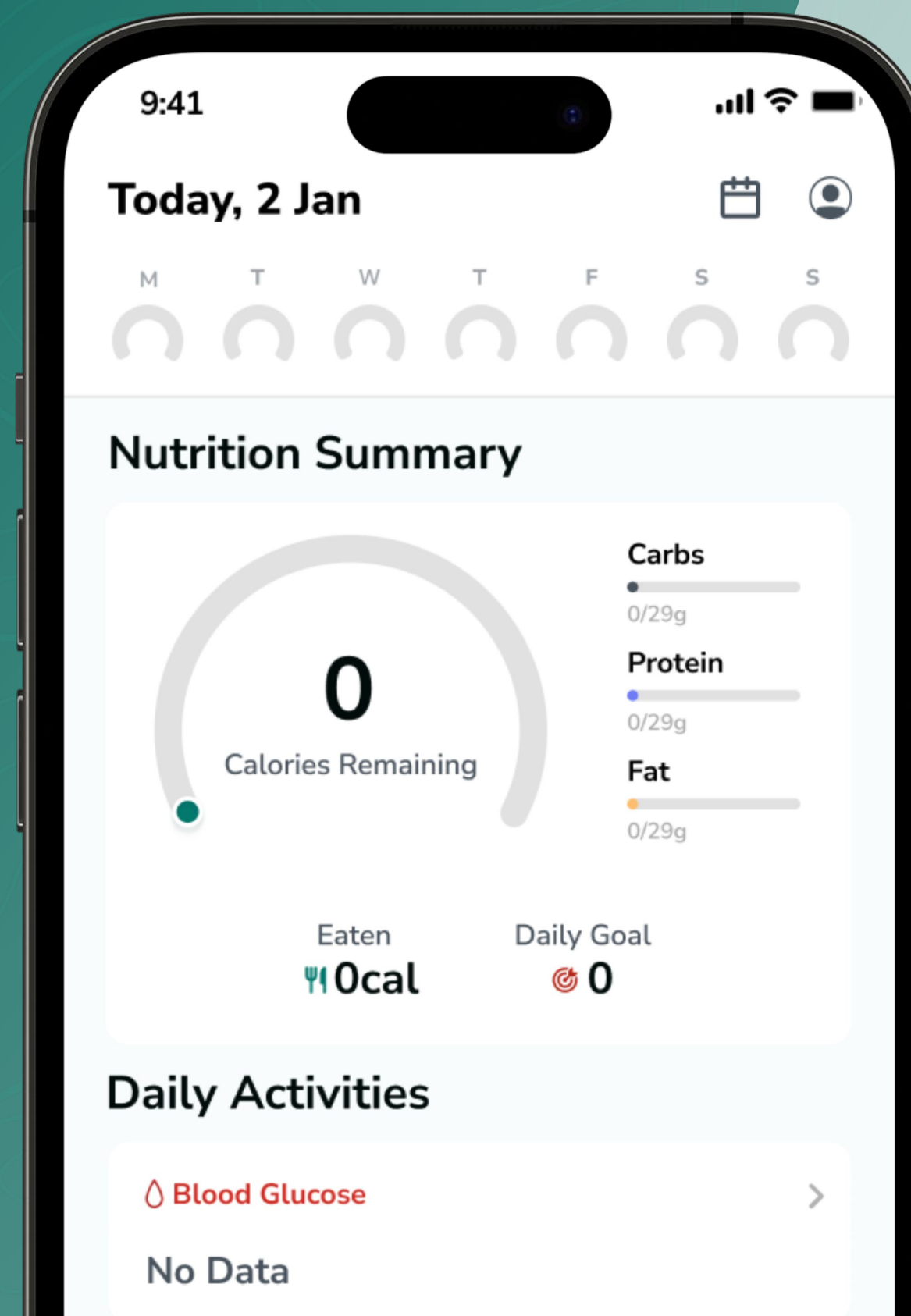
Team member:

Kimia Chukwuebuka Olajumoke Victor Shamim

Tools



Course: CMP 7215 - Human Centered Design

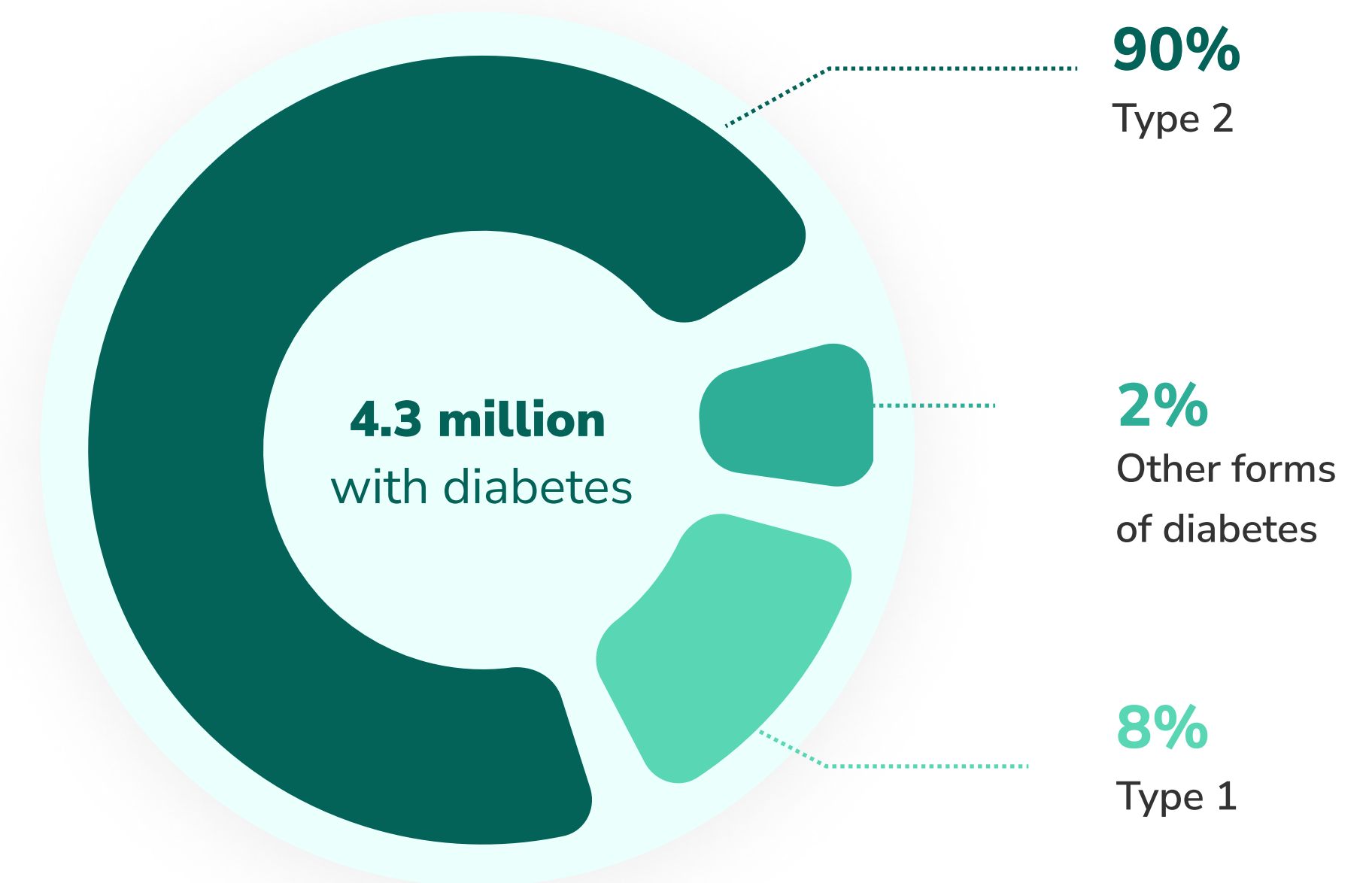


The Problem

According to Diabetes UK, as of 2021, there are approximately **4.9 million people** diagnosed with diabetes in the UK. Of this population, about **8%** have Type 1 diabetes, **90%** have Type 2 and other forms of diabetes making up the remaining **2%**.

Research shows unhealthy eating is a key factor in developing **diabetes**. Many individuals with diabetes struggle to **adopt healthy eating** due to lack of awareness, motivation, and support, leading to complications. A solution is needed to help them improve their eating habits, quality of life, and reduce diabetes-related issues.

[Article link](#) →



Competitive Analysis

Direct Competitors

FEATURES	Carbs & Cals	mySugr
Community	✗	✗
Blood Glucose Tracking	✗	✓
Meal Plan	✓	✗
Medication tracking	✗	✗
Logging meals	✓	✓

Indirect Competitors

FEATURES	Lifesum	YAZIO
Community	✗	✗
Blood Glucose Tracking	✗	✗
Meal Plan	✓	✓
Medication tracking	✗	✗
Logging meals	✓	✓

Empathize - User Research

We conducted interviews, empathy maps, and surveys to understand the behavior and design needs of people managing their blood glucose levels, identifying them as our primary audience.

Key challenges identified in our research:

- Difficulties with meal planning
- Struggles with medication adherence
- Need for reminders
- Lack of supportive community

Users specifically faced:

- Challenges in maintaining a healthy diet
- Difficulty making food choices
- Trouble remembering to take medication
- Insufficient support systems

AGE GROUP

18 - 60 Years



Empathise - User Survey

Empathize user surveys are research tools designed to understand users' needs, wants, and expectations through their experiences and emotions.

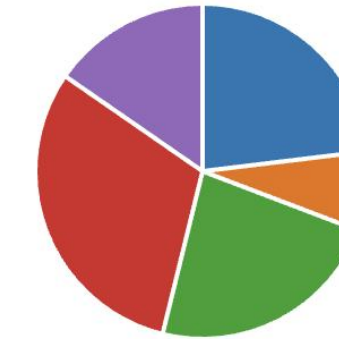
Our research included:

- Online and offline surveys
- 13 participants
- 11 questions

1. What is your age group

[More Details](#)

18 - 25 years	3
26 - 35 years	1
36 - 45 years	3
46 - 60 years	4
60 years and above	2



8. How often do you monitor your blood sugar levels?

[More Details](#)

[Insights](#)

Multiple times a day	2
Once a day	4
A few times a week	5
Rarely	2

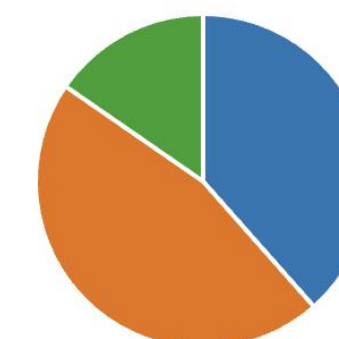


2. What type of diabetes do you have?

[More Details](#)

[Insights](#)

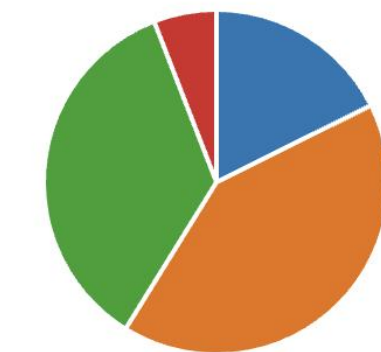
Type 1	5
Type 2	6
Gestational Diabetes	2



3. How do you currently manage your diabetes

[More Details](#)

Insulin Injection	3
Oral Medication	7
Diet	6
Exercise	1
Other	0

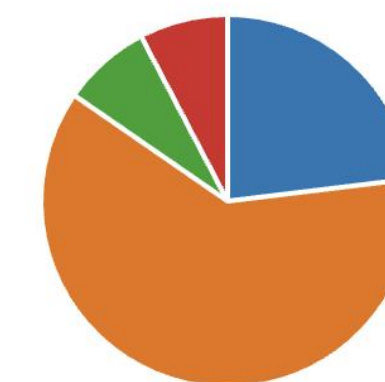


6. How do you currently plan your meals?

[More Details](#)

[Insights](#)

I follow a specific diet plan reco...	3
I don't follow a specific diet plan...	8
I don't plan my meals, I eat what...	1
Other	1



Empathy Mapping

Does

- Tries to eat healthy but often falls back on fast food due to time constraints
- She barely keeps up with her appointments and medication.

Feels

- Overwhelmed with managing diabetes on top of her busy schedule.
- Frustrated with the lack of progress in managing her diabetes.
- Motivated to improve her health.



Think

- "I need to find a way to manage my diabetes without sacrificing my busy schedule."
- "How can I better manage my diabetes without feeling overwhelmed and burnt out?"



Says

- "I want to connect with other people who are managing diabetes."
- "I'm struggling to stick to my diet plan."
- "I need a solution that fits my busy schedule."



Isabella Jones

Age: 27 years old **Occupation:** Banker **Location:** Birmingham,UK
Status: Married **Diabetes Type:** Type 2 **Impairment:** Diabetic Retinopathy

Goals

- She wants to maintain healthy living through proper nutrition
- To manage her blood glucose level and overall health condition to avoid long term health complications.
- Develop an effective meal plan to control carbohydrate and protein intake

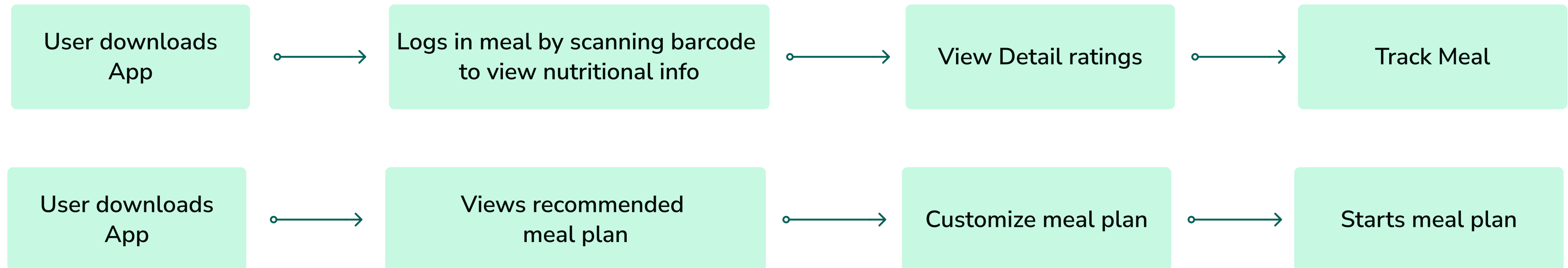
Pain Points

- Lacks a structured meal plan, affecting healthy eating habits.
- Uncertain about what to eat to stabilize blood glucose levels, especially when they drop at night.
- Has difficulty reading app text due to diabetic retinopathy.

Scenario

Mary Grace, a 27-year-old banker diagnosed with type 2 diabetes, faces challenges in managing her condition due to her busy work life and lack of a proper meal plan. Her irregular eating habits often cause her blood glucose levels to fluctuate. Additionally, diabetic retinopathy has affected her vision, making it hard to read small text on apps.

To improve her health, she downloaded an application that offers large, readable fonts, personalized meal plans to control her carb and protein intake, and tools to monitor her blood glucose levels, helping her maintain a healthier lifestyle.





Charles Davis

Age: 42 years old Occupation: Data Analyst Location: Birmingham,Uk.

Status: Married Diabetes Type: Type 2

Goals

- Ability to track his BGL without going to GP every time.
- Choose correct portion of Food, Fruits and Dairy based on his health conditions and ensure getting the right amount of nutrients.
- Connect with others living with diabetes to share experiences.

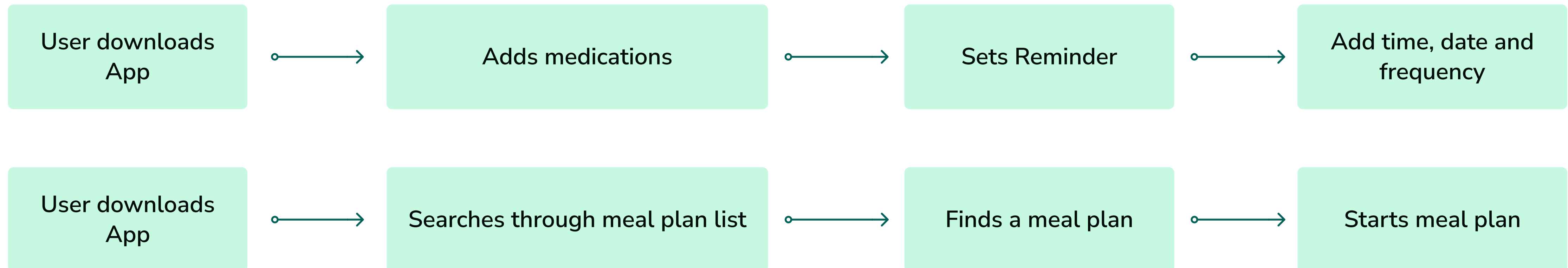
Pain Points

- I tend to forget the right time to take my insulin and sometimes it causes a spike in my blood glucose level.
- He tends to eat traditional food which has lots of carbs, and struggles to find alternatives that are both satisfying and healthy.
- Struggles with cravings for sugary foods.

Scenario

Charles Davis, a 42-year-old data analyst recently diagnosed with type 2 diabetes, faces challenges in **managing both his medication and diet**. He frequently forgets to take his insulin on time, causing his blood glucose levels to fluctuate. Additionally, he struggles to reconcile his love for traditional high-carb foods with his dietary restrictions and often battles cravings for sugary treats.

To address these challenges, Charles downloaded an application that helps him manage his medication by setting reminders and tracking doses. The app also offers low-carb food alternatives and portion control guidance, helping him make healthier dietary choices.



Team Challenges

We faced challenges due to time constraints and a strict project deadline, leading to disagreements about which features could be designed and tested within the available timeframe. To resolve this, we decided to use card sorting, which helped us prioritize and make more informed decisions about the features we wanted to focus on.



Card Sorting



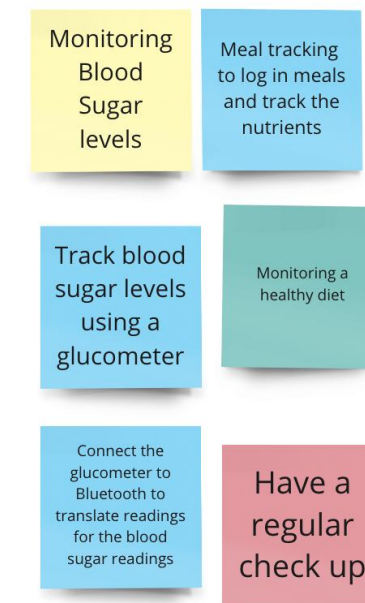
Reminder



Exercise



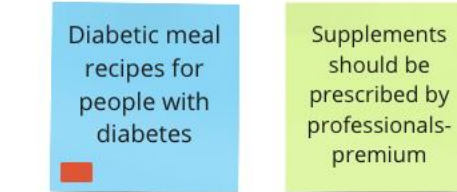
Tracking



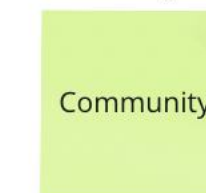
Information/Recommendation



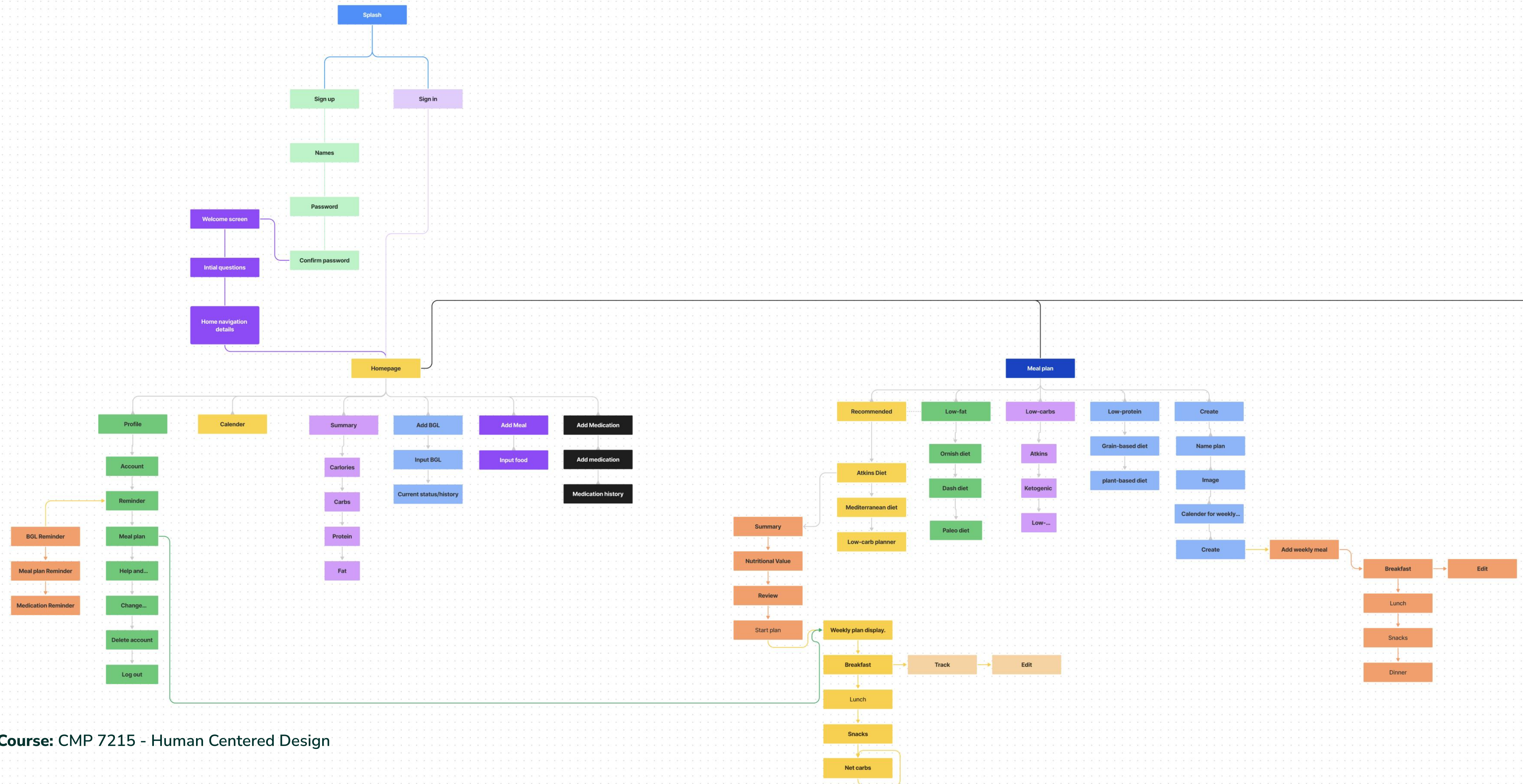
Meal/nutrition



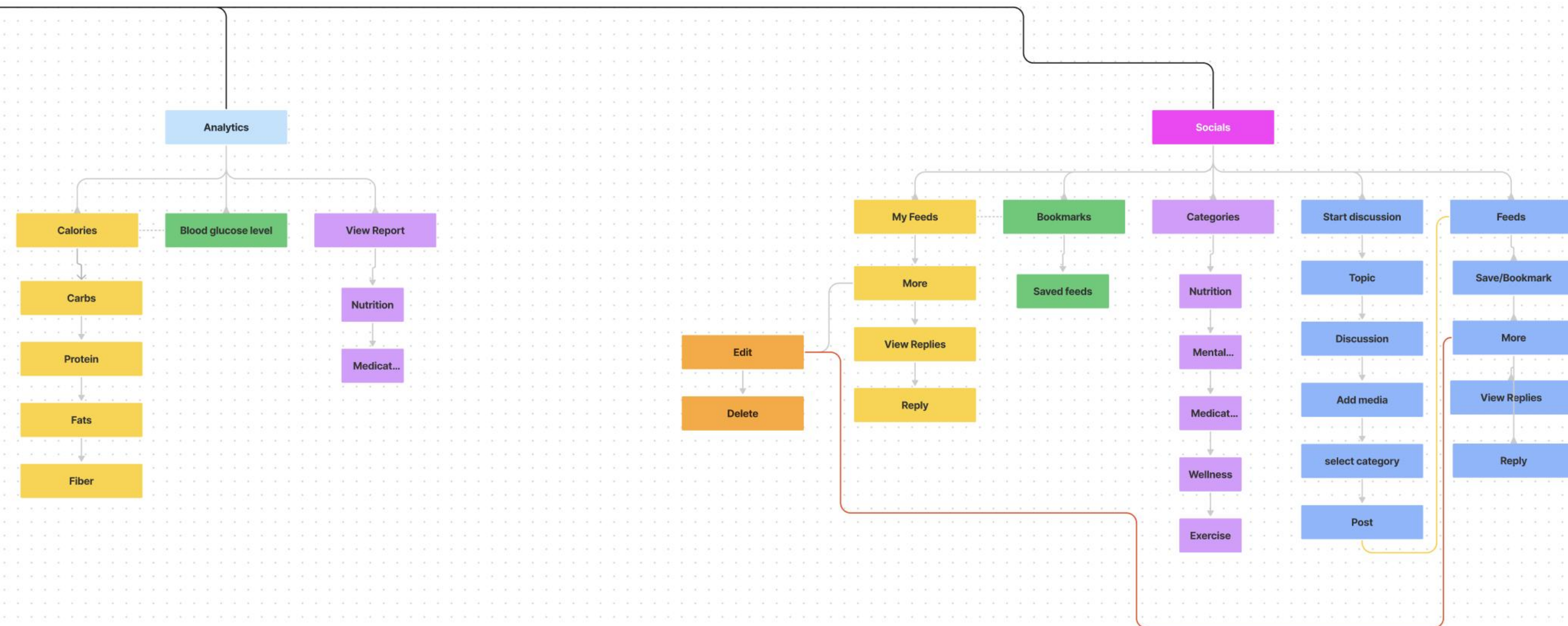
Community



Information Architecture



Information Architecture

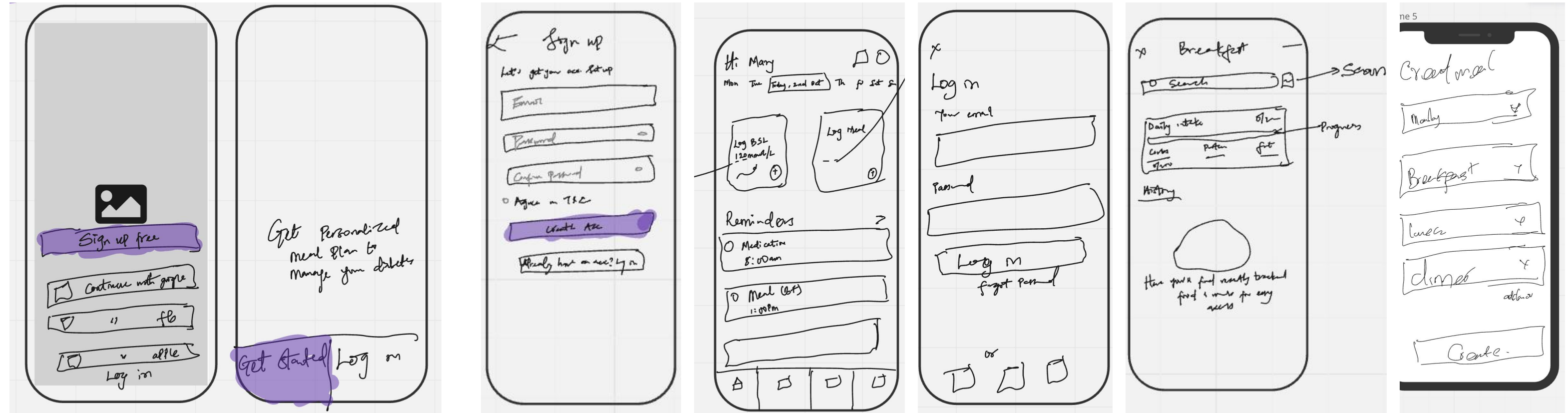


Sketches

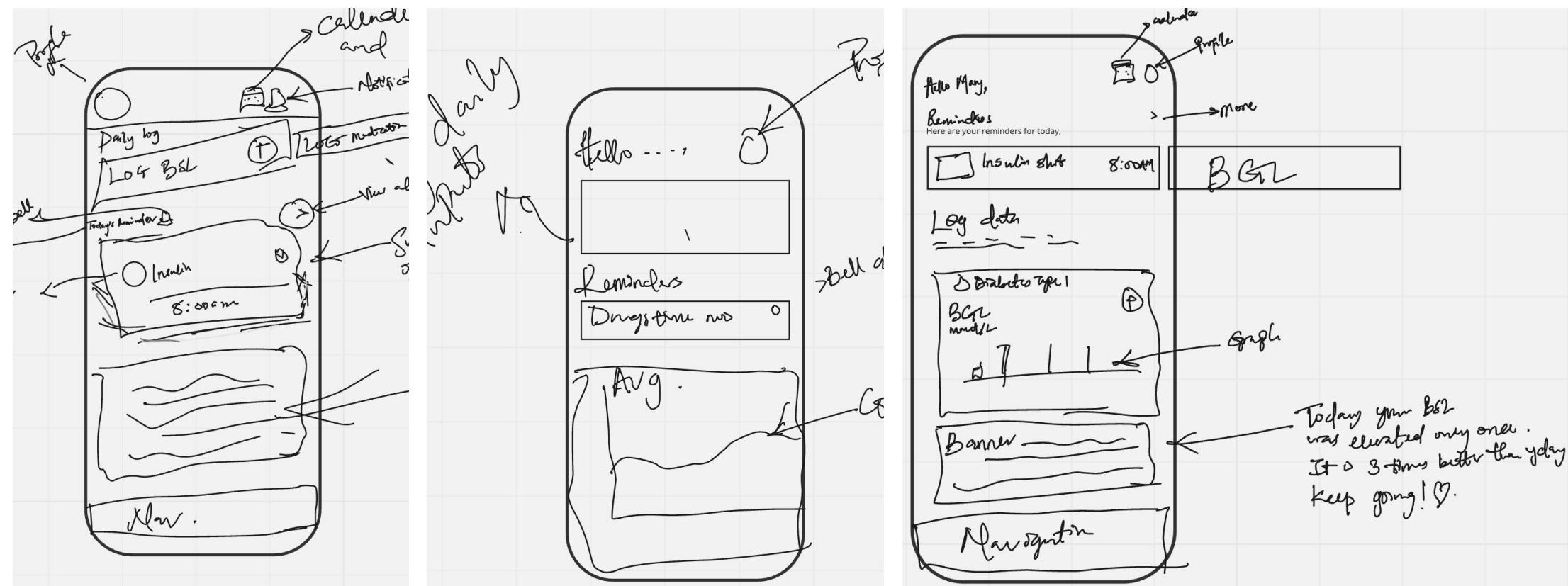
Onboarding



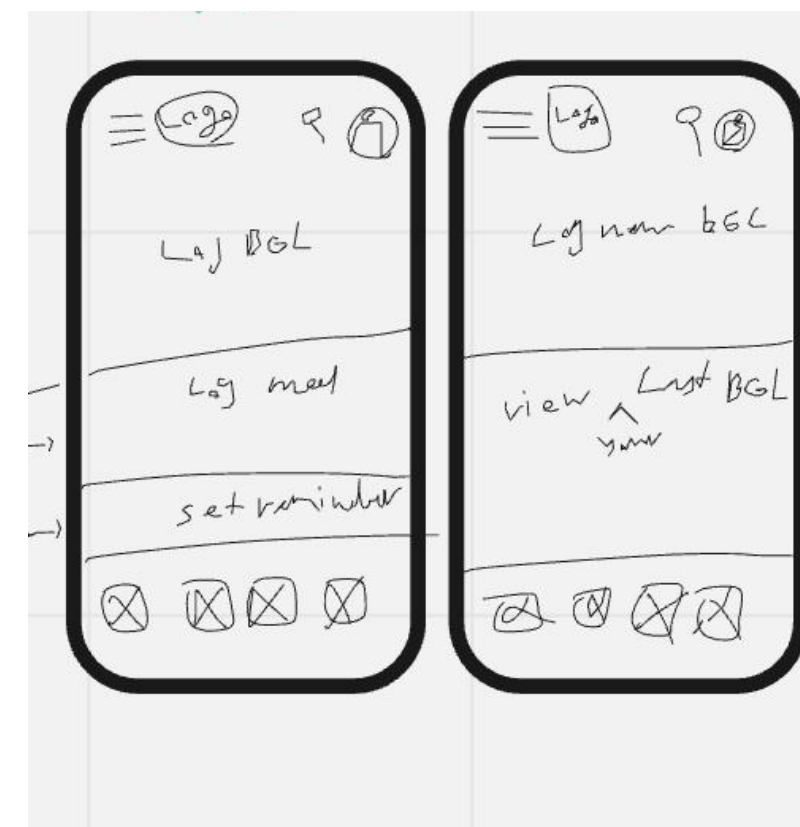
Sign Up/Sign In



Home Page



Log BGL

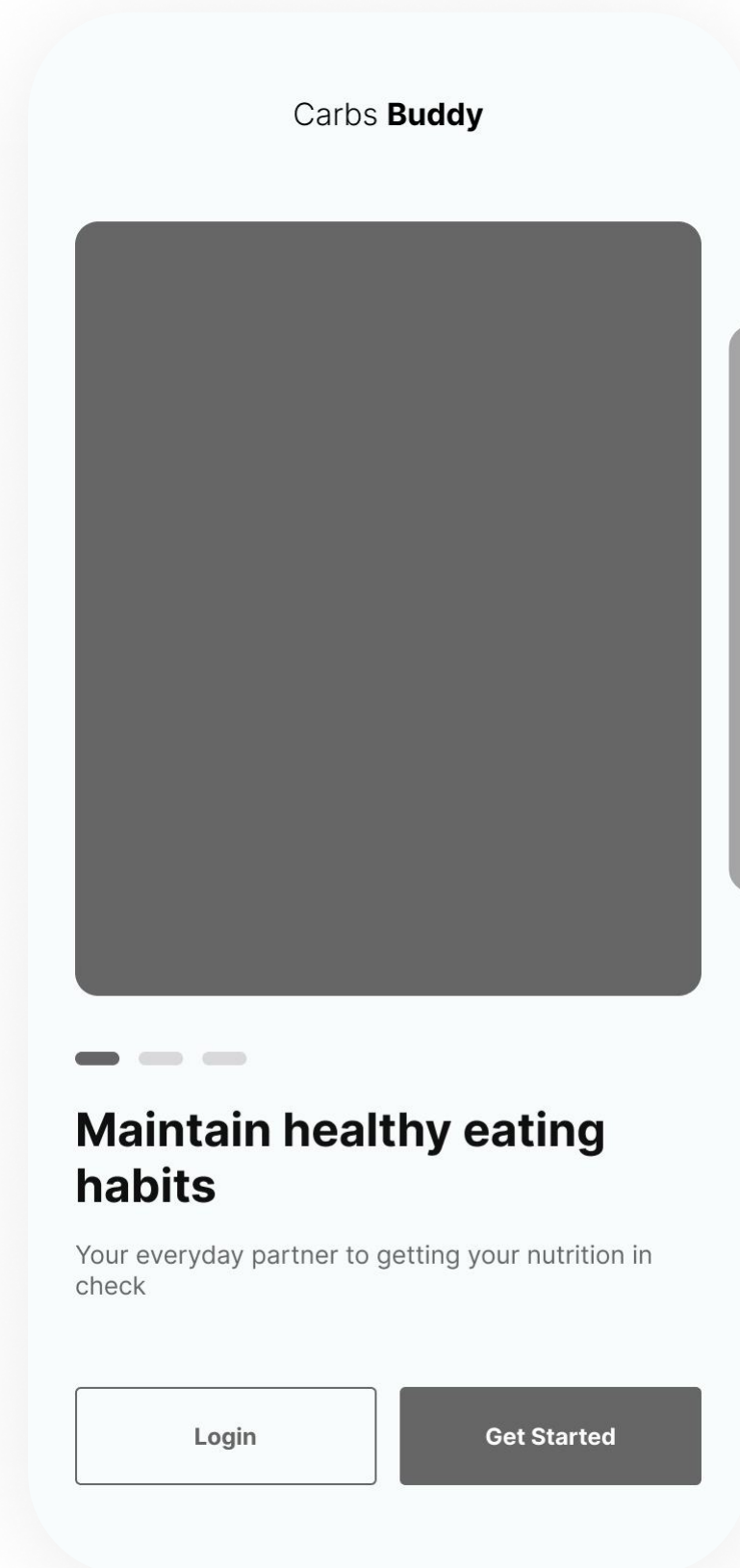


Log Medication

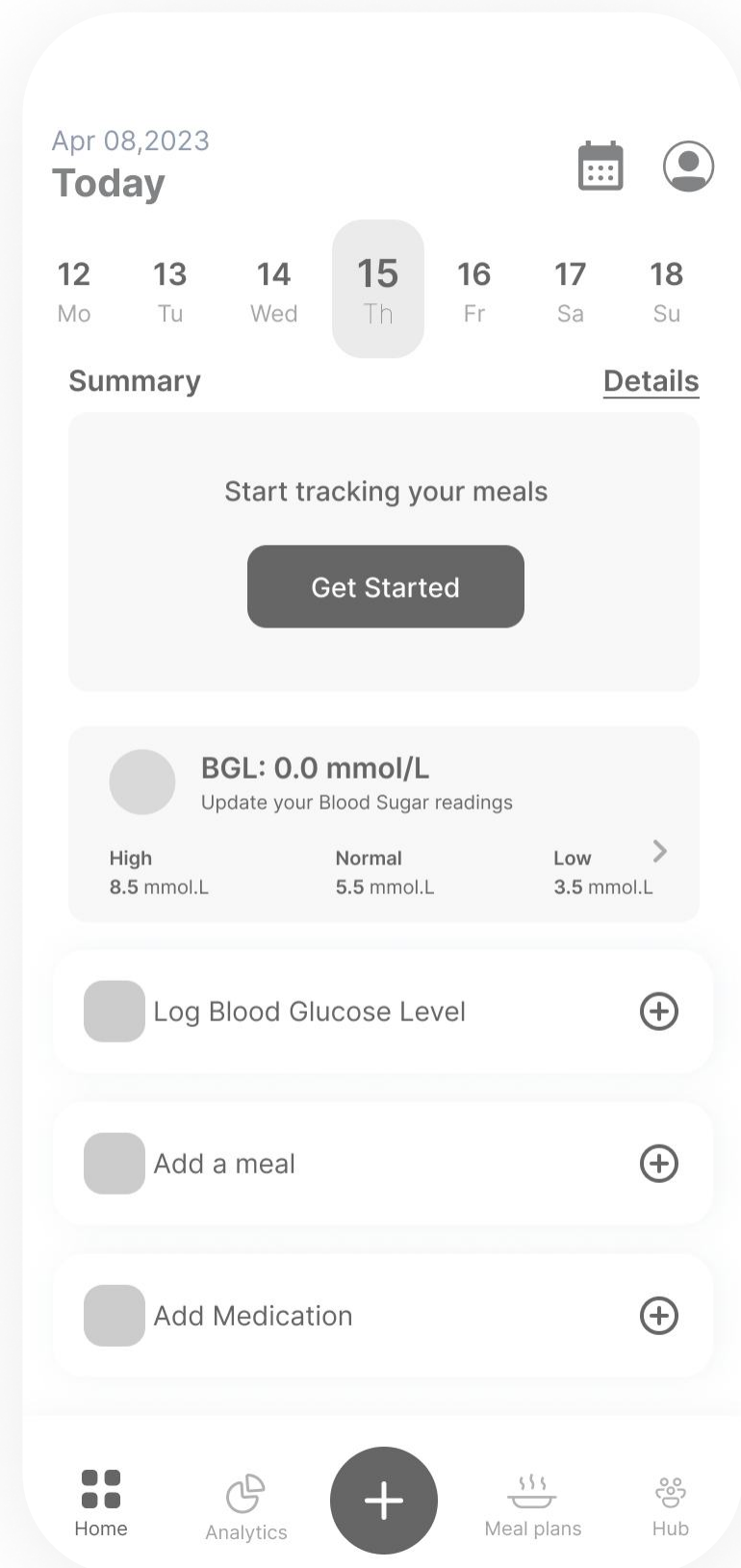


Low-Fidelity

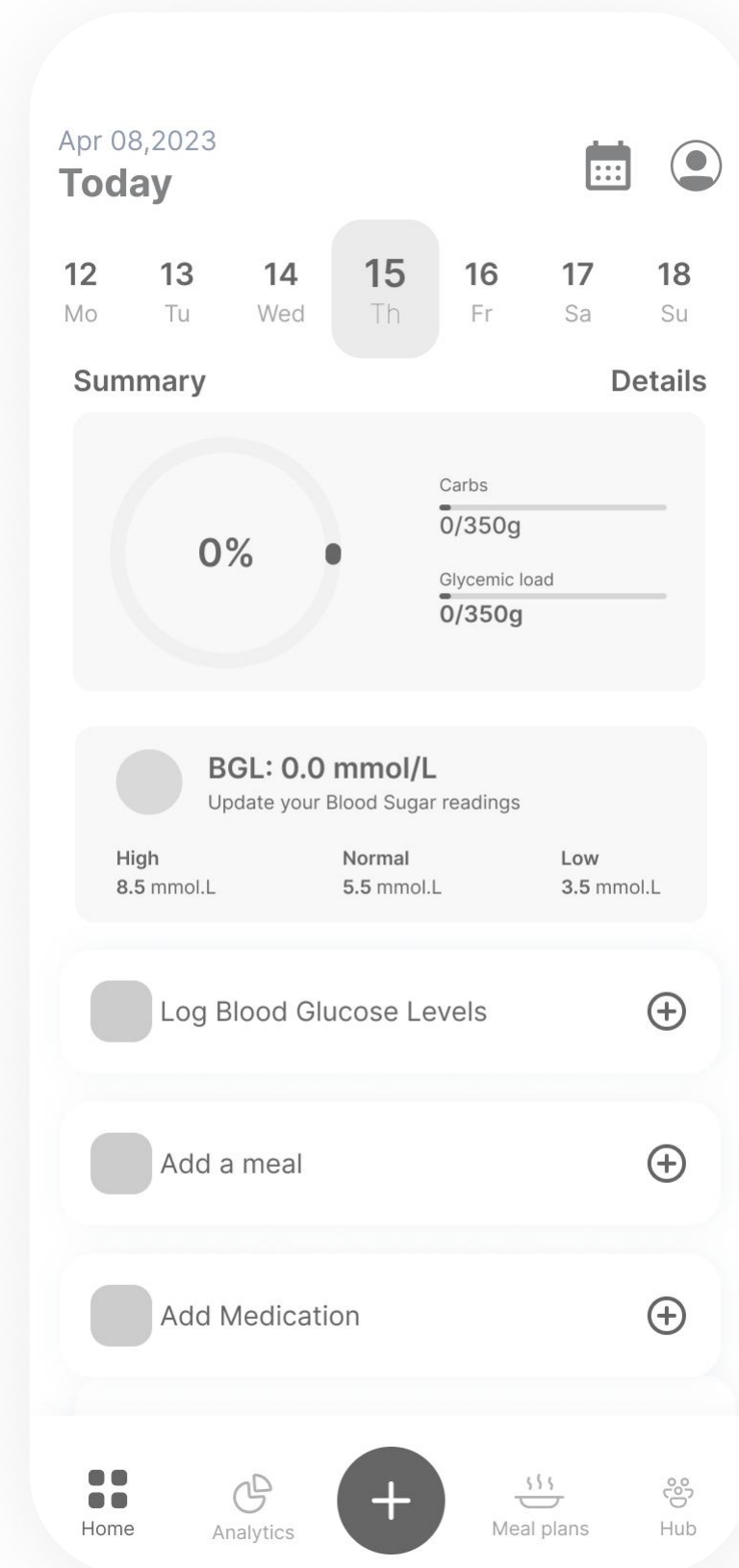
Onboarding



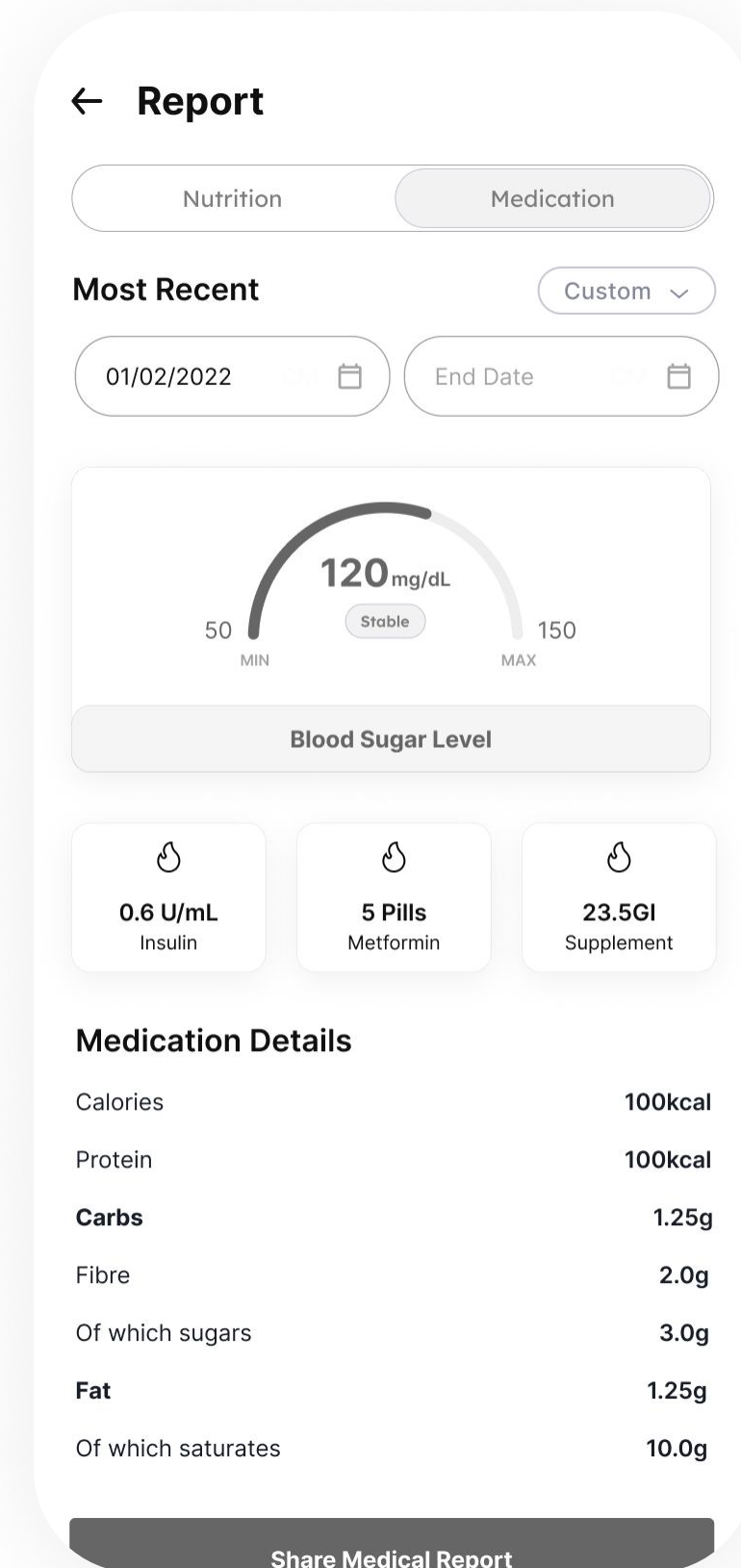
Home page-No data



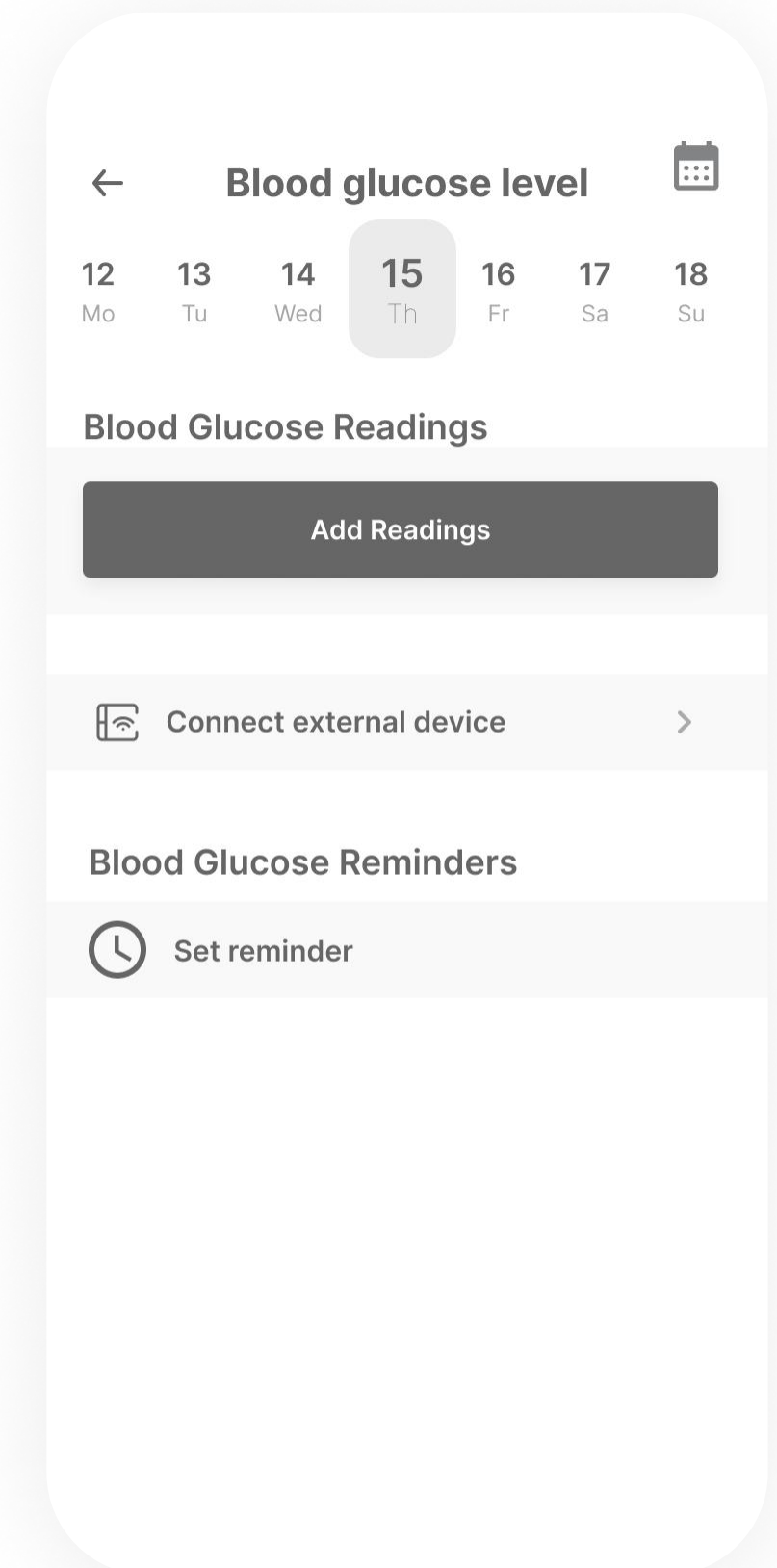
Home page



Report



Blood Glucose Level



Accessibility

We consider our color choices :

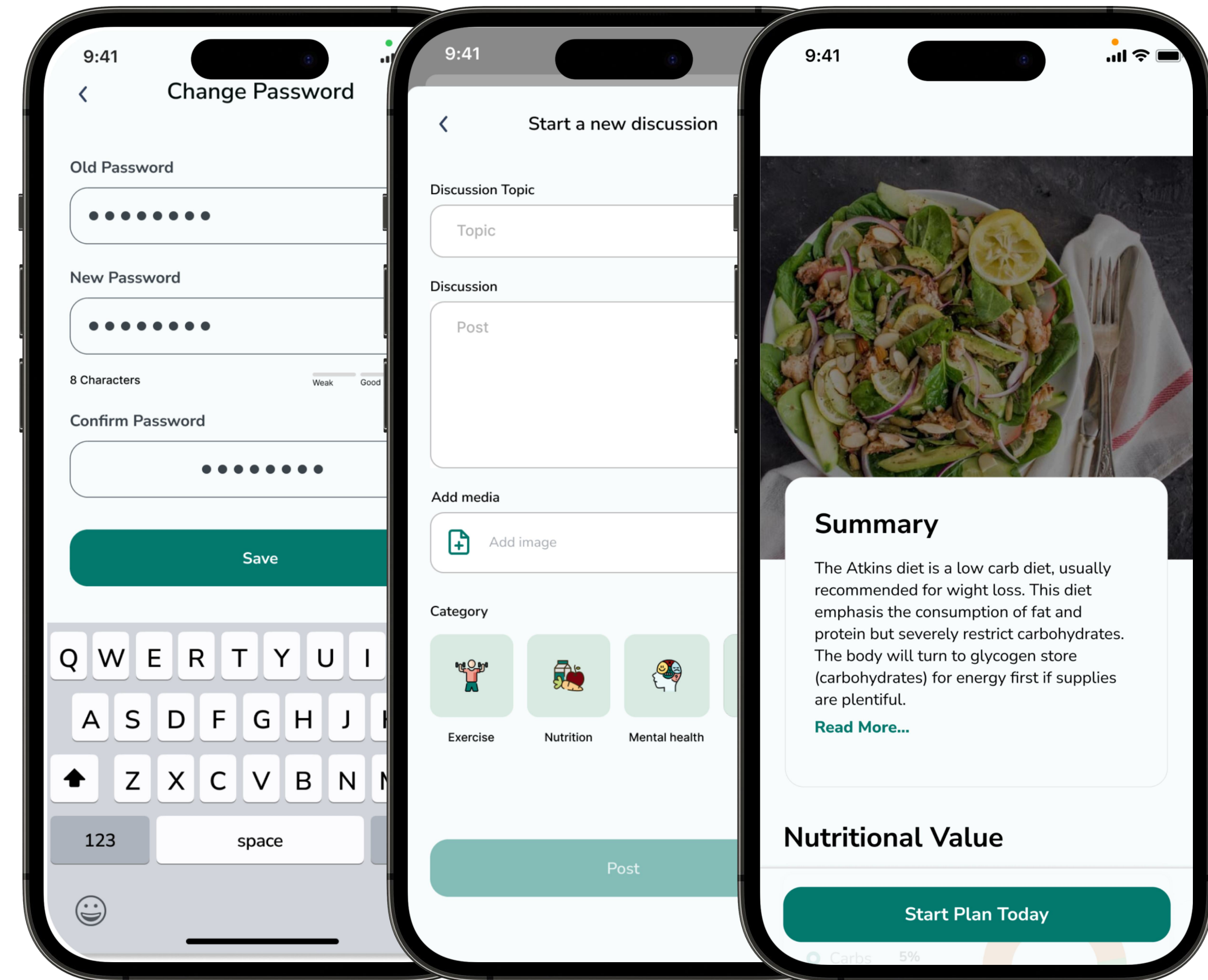
Text Color: #FFFFFF

Background Color: #036358

Contrast Ratio: 7.17 : 1

Preview

- Regular Text: A high color contrast makes anything easier to read. **Pass** for 17pt and below
- Large Text: A high color contrast makes anything easier to read. **Pass** for 18pt and above / 14pt bold and above
- Graphic Components: (Square, Circle, Triangle icons). **Pass** for icons and actionable graphics



Design System

Colour Palette

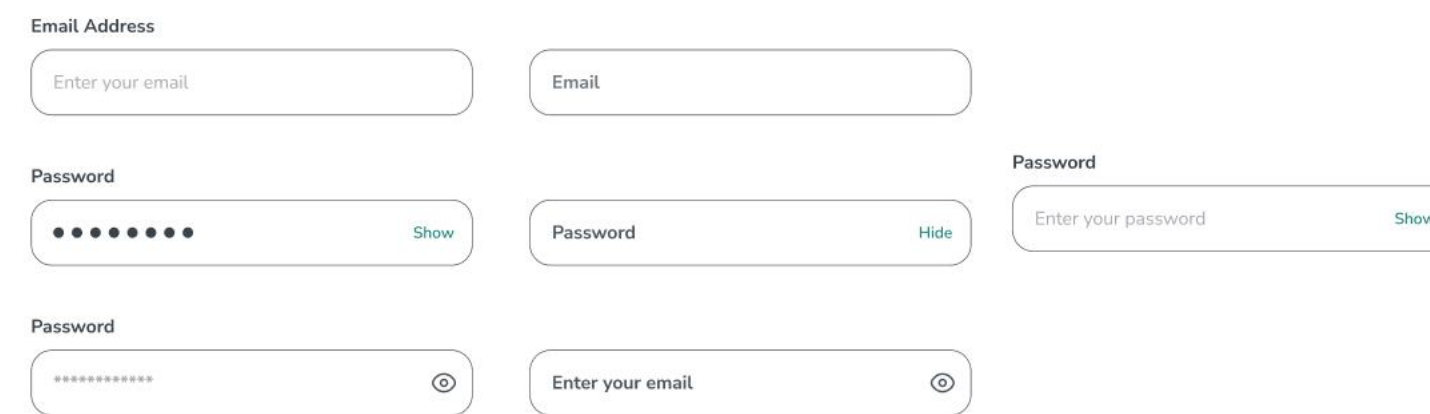


Typography

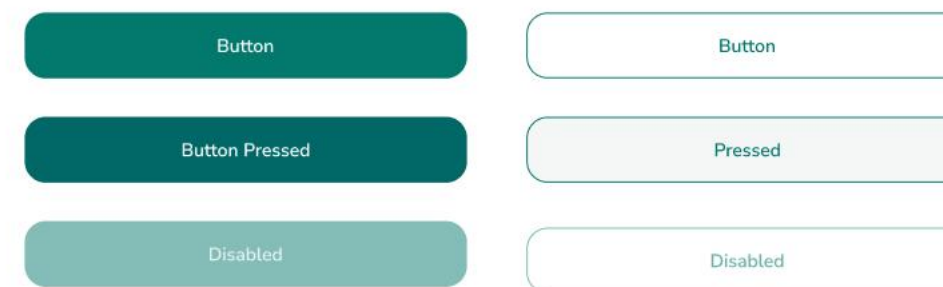
MOBILE HEADINGS			
STYLE NAME	FONT SIZE	LINE HEIGHT	SAMPLE
H1	32px	Auto	Headline 1
H2	28px	Auto	Headline 2
H3	24px	Auto	Headline 3
H4	20px	Auto	Headline 4

BODY TEXT					
STYLE NAME	FONT SIZE	LINE HEIGHT	SAMPLE		
Body 1	16px	22px	Font-normal	Font-medium	Font-semibold
Body 2	14px	Auto	Font-normal	Font-medium	Font-extrabold
Body 3	12px	Auto	Font-normal	Font-semibold	
Button	14px	22px		Font-semibold	Font-bold

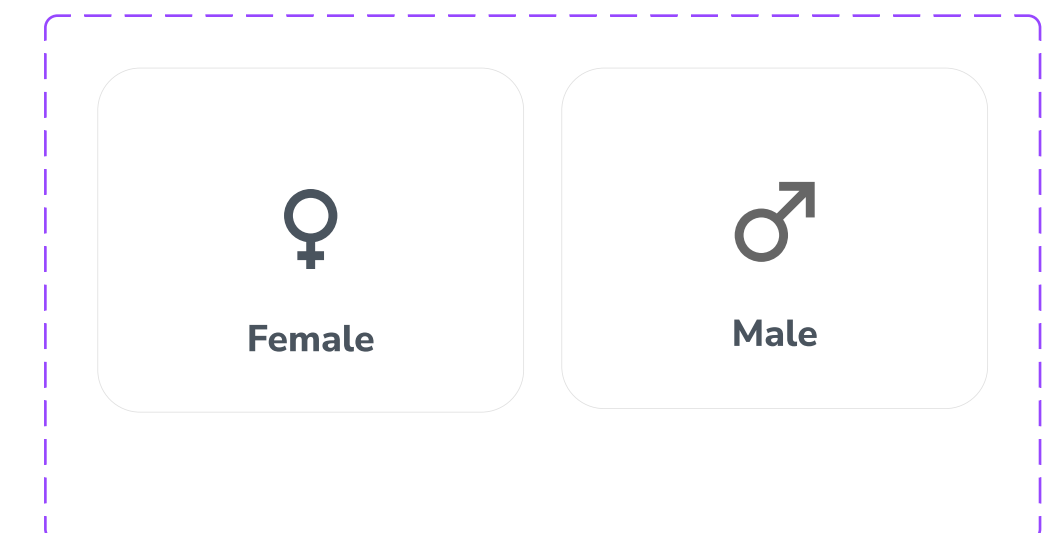
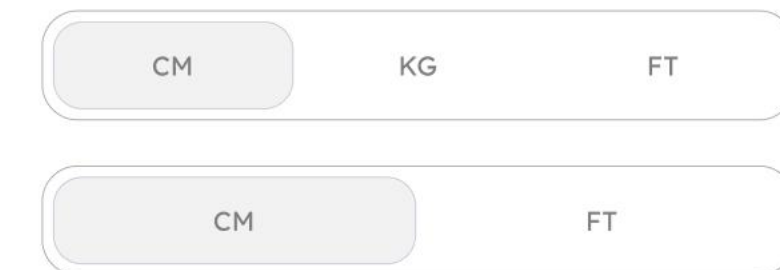
Text field



Buttons



Segment Control



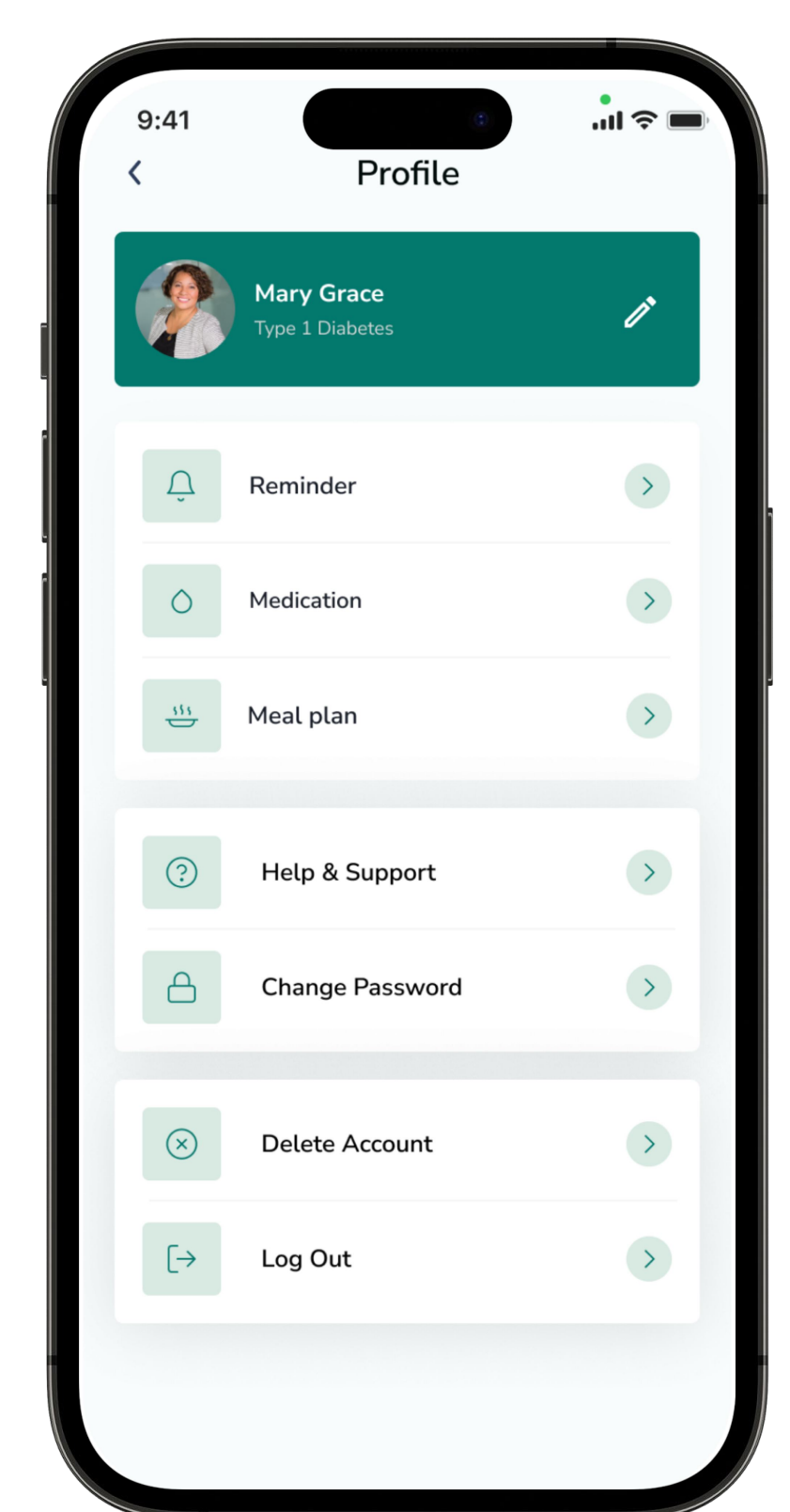
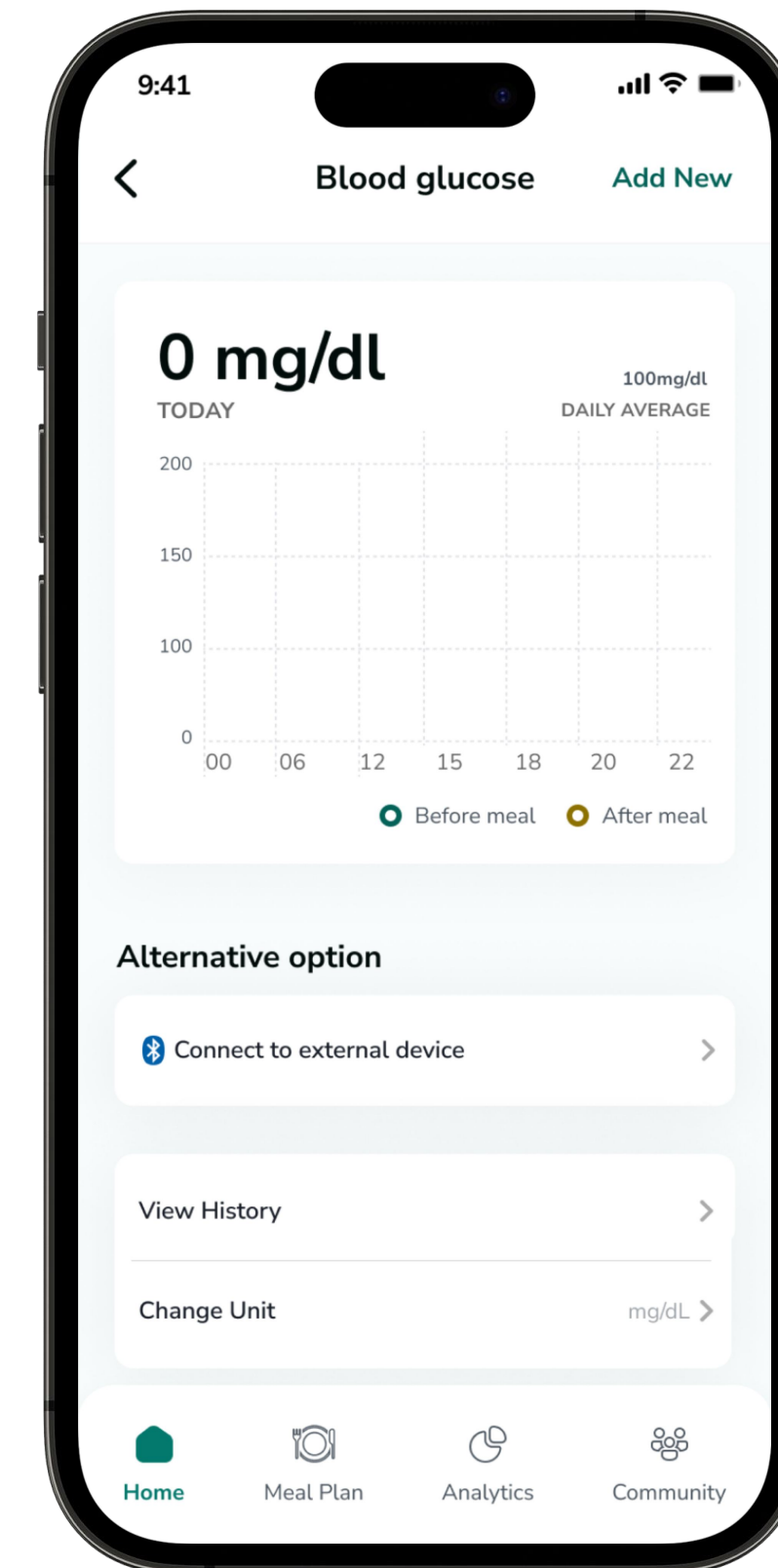
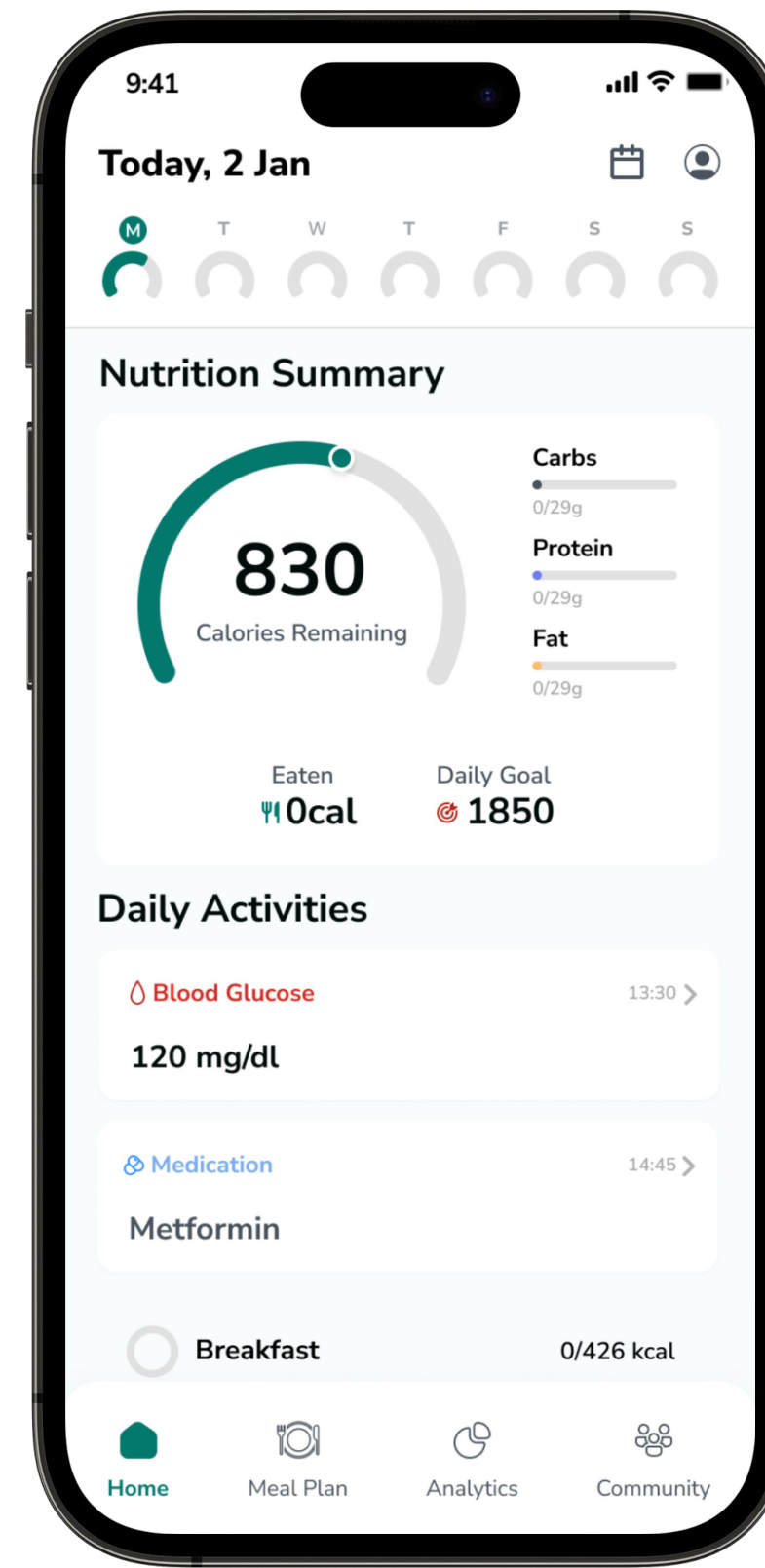
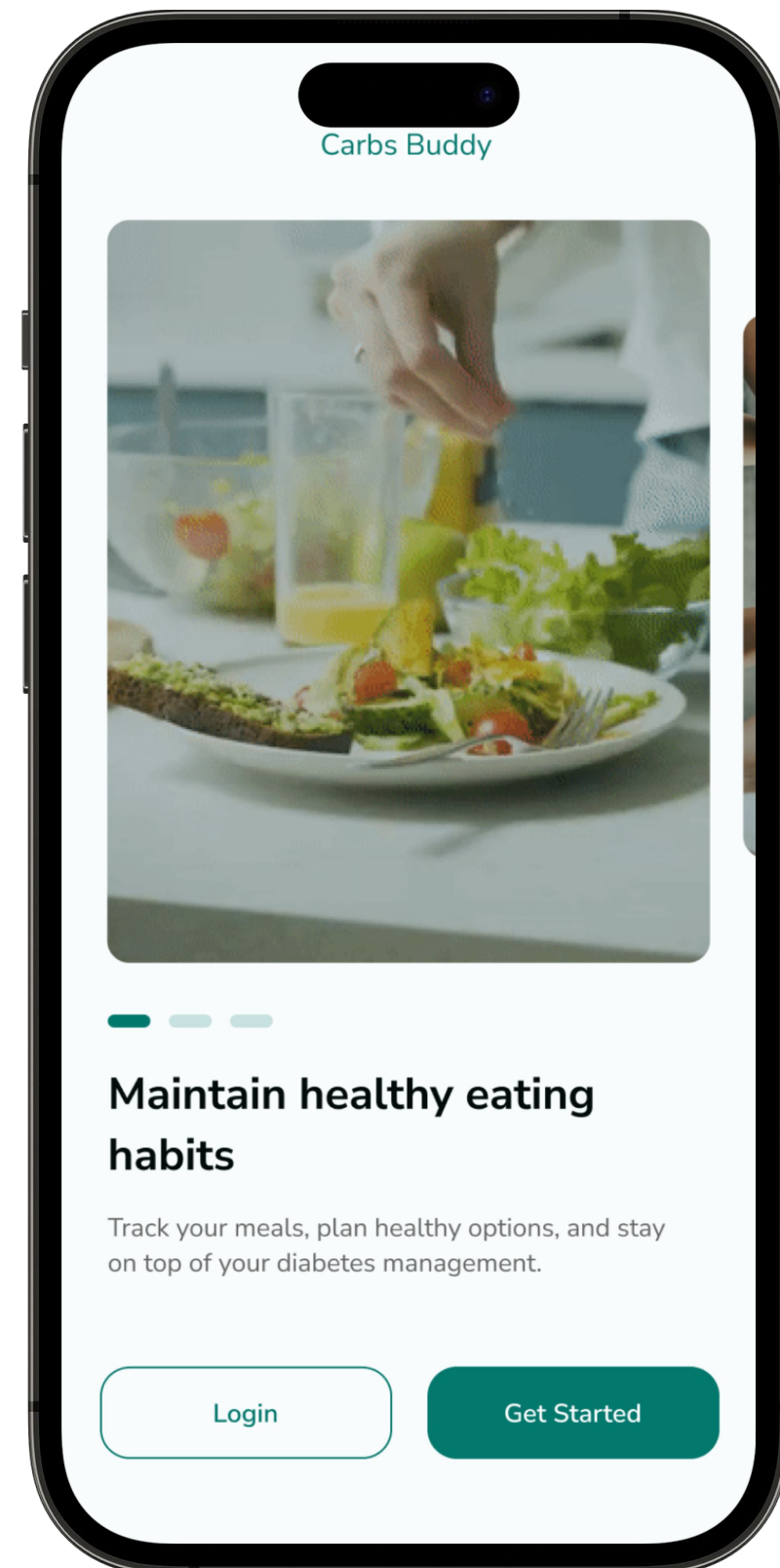
High-Fidelity

Onboarding

Home Page

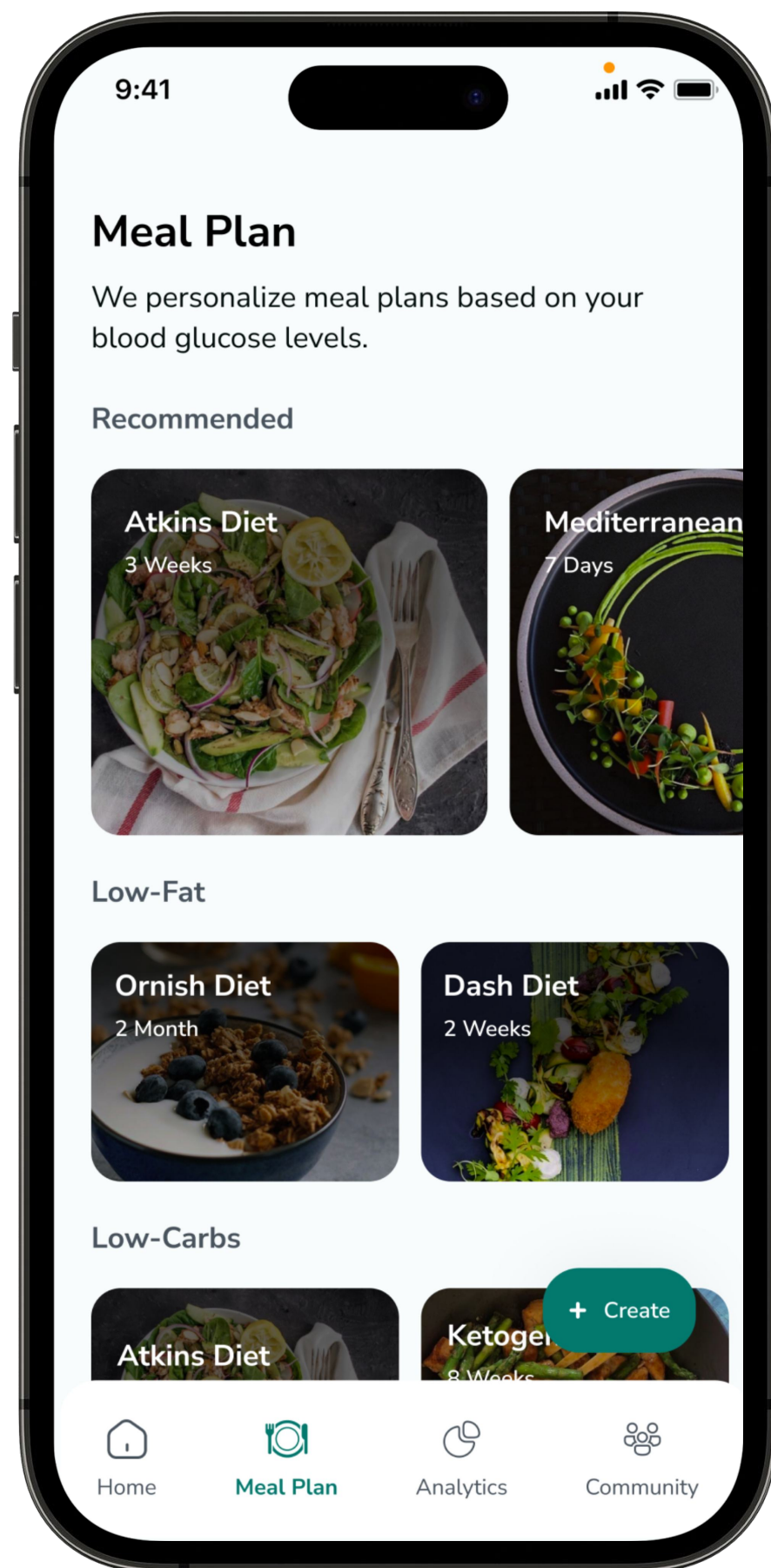
Blood Glucose Level

Profile

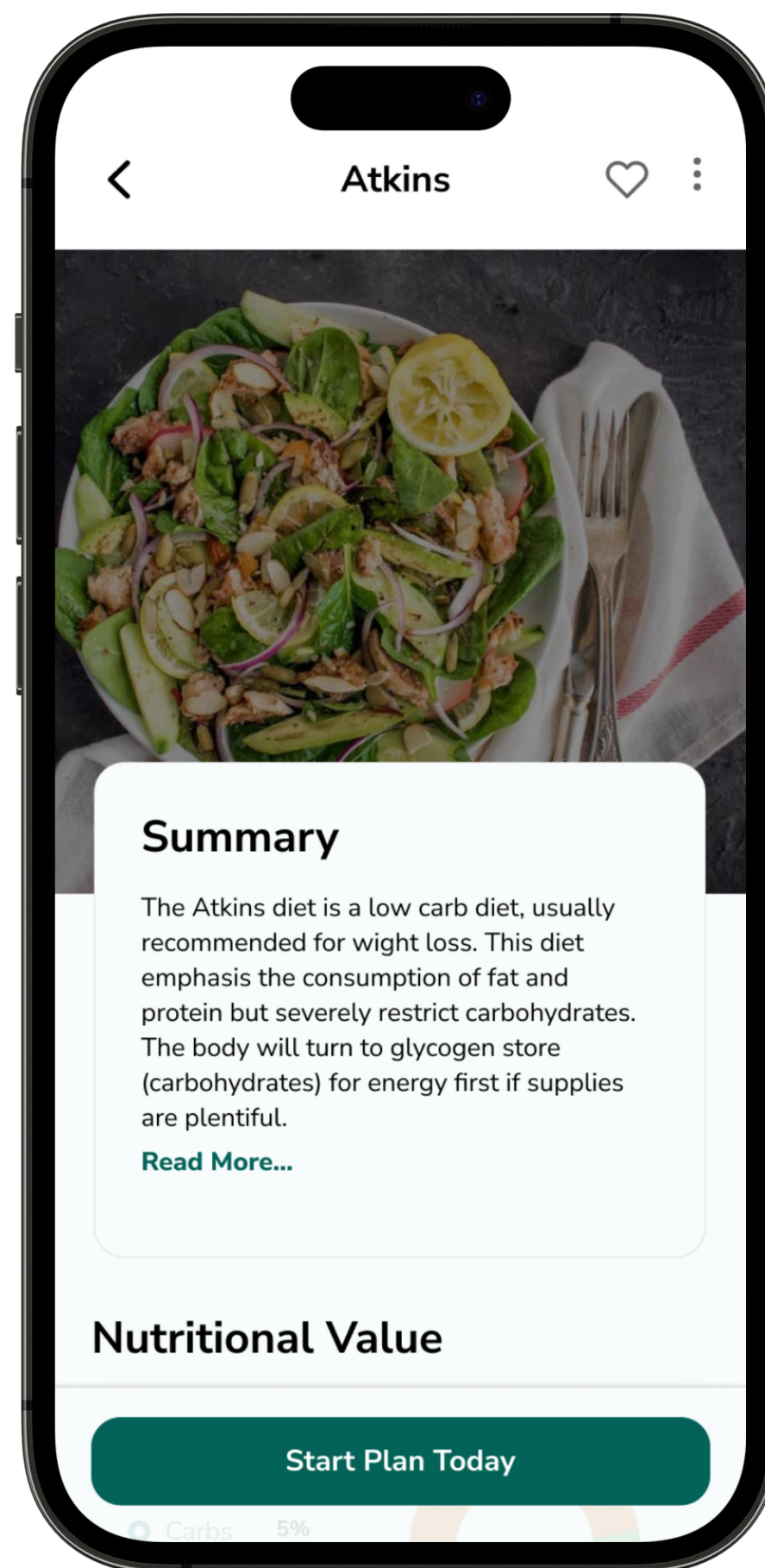


High-Fidelity

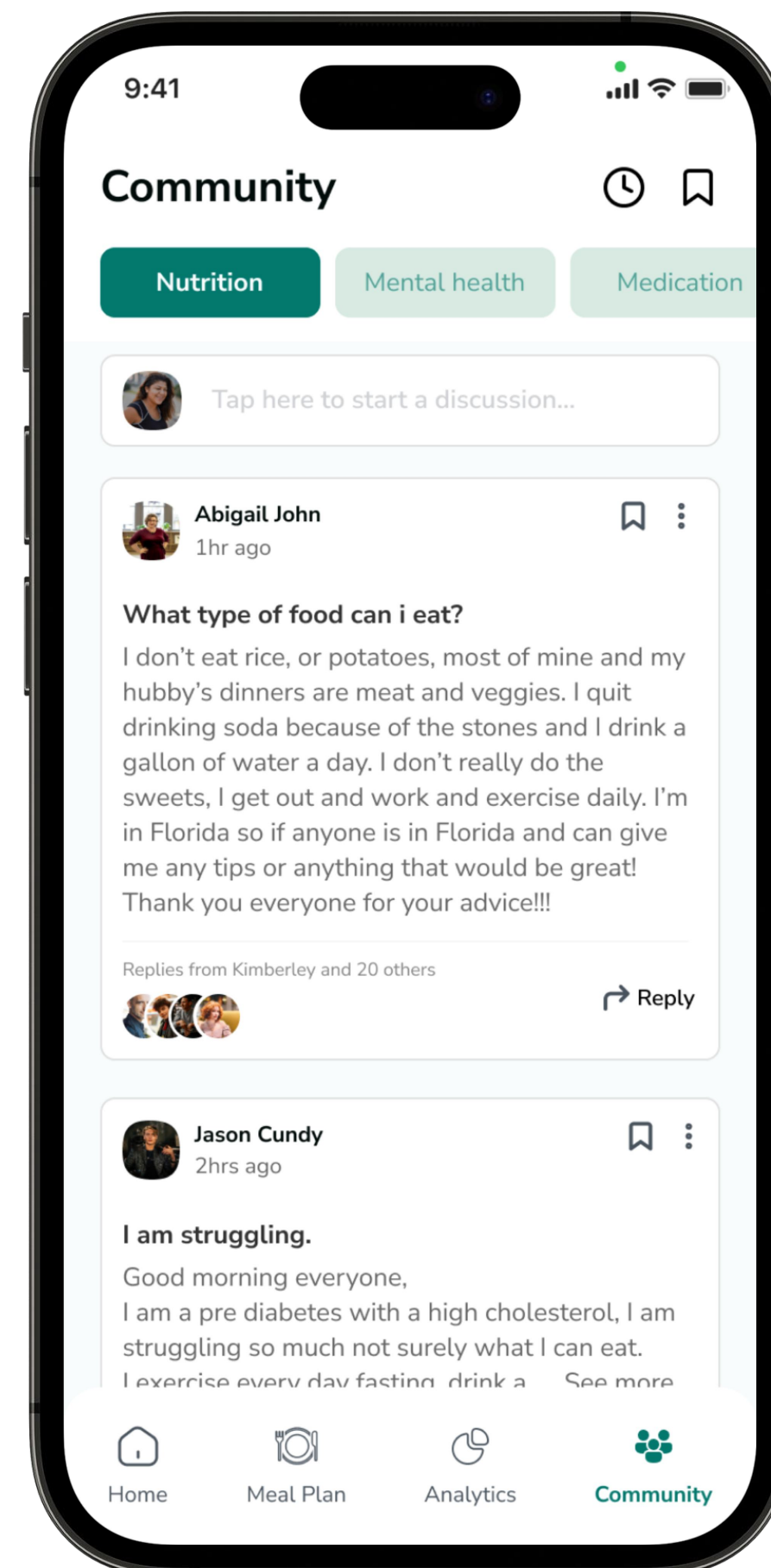
Meal Plan



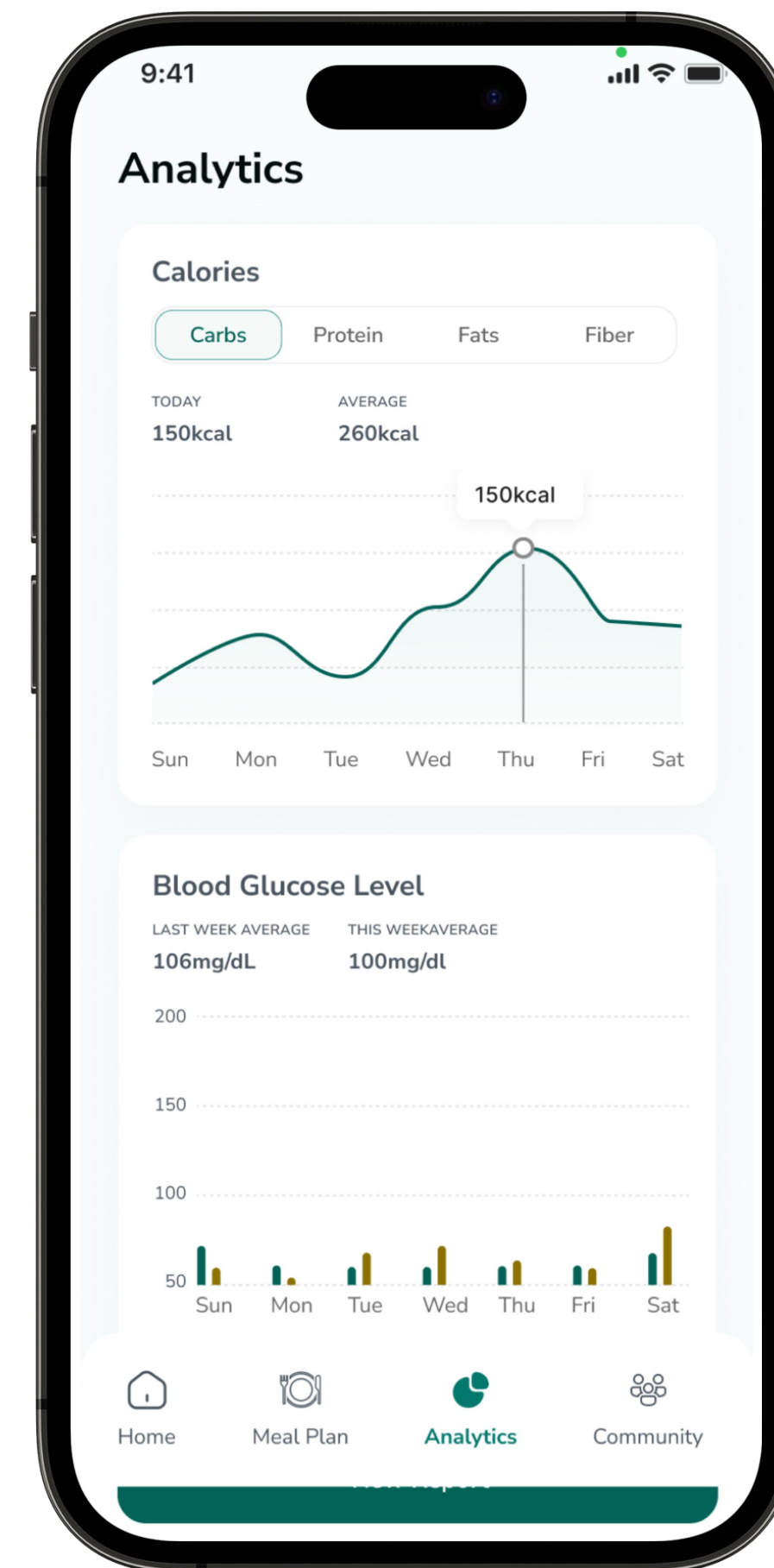
Atkins Plan



Community



Analytics



User Testing

Qualitative and Quantitative data

For user testing, we employed both qualitative and quantitative research methods. For qualitative research, we used the **System Usability Questionnaire**, while for quantitative research, we conducted the **Think Aloud Protocol** and **Observations** to gather data.

The result of the System Usability Scale (SUS) was **67.9%**

Carbs Buddy
System Usability Scale (SUS)

Round 2 Testing

* Required

1. I think that I would like to use this system frequently. * [🗨️]

1 2 3 4 5

Strongly disagree Strongly agree

4. I think that I would need the support of a technical person to be able to use this system. * [🗨️]

1 2 3 4 5

Strong disagree Strongly agree

5. I found the various functions in this system were well integrated. * [🗨️]

1 2 3 4 5

Strong disagree Strongly agree

8. I found the system very cumbersome to use. * [🗨️]

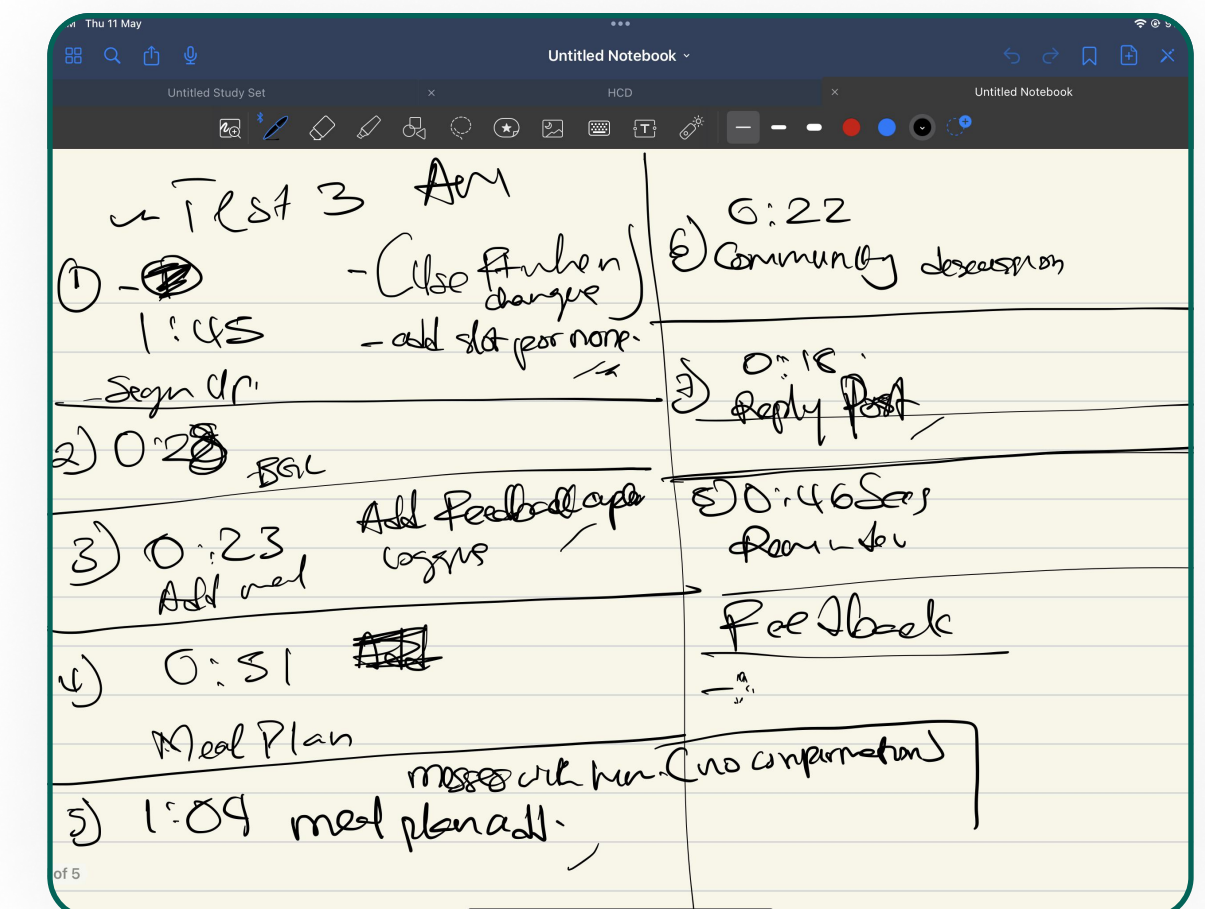
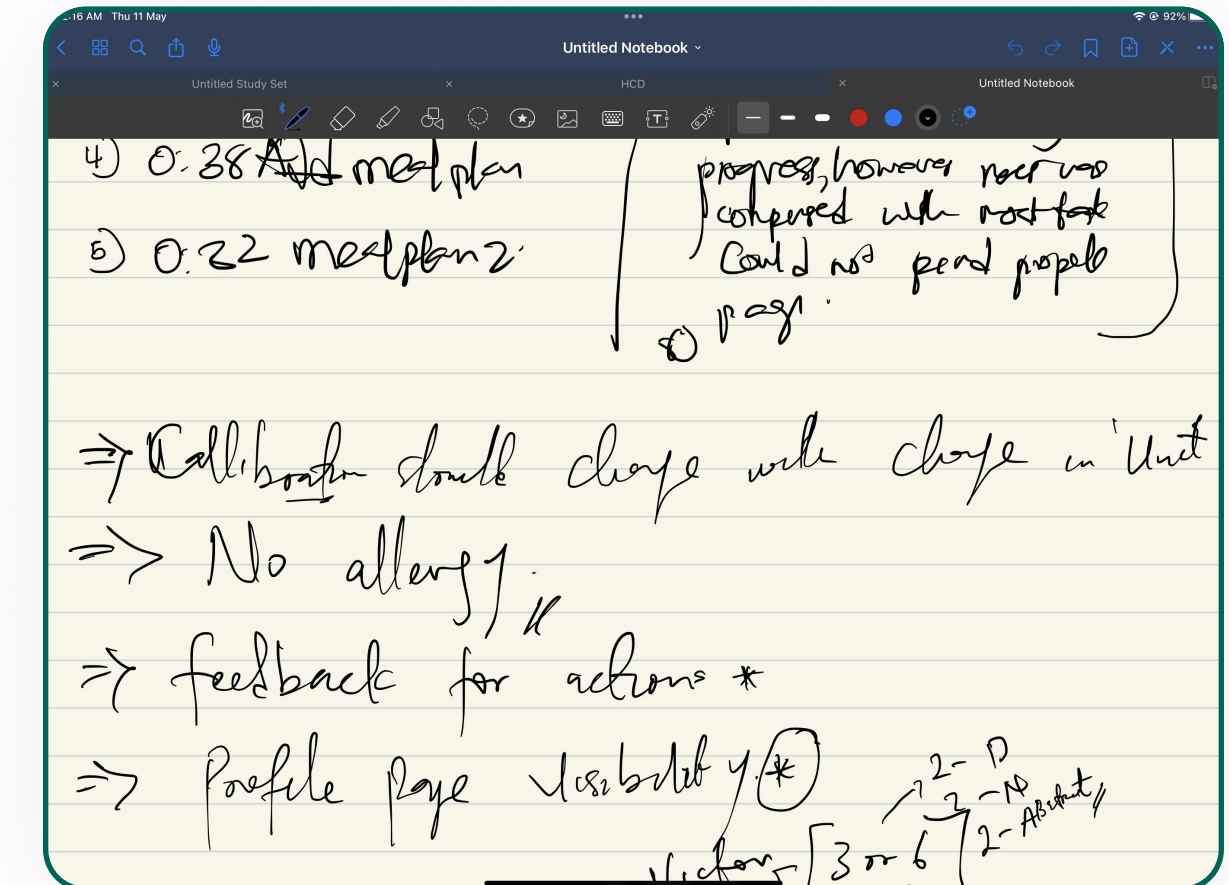
1 2 3 4 5

Strong disagree Strongly agree

9. I felt very confident using the system. * [🗨️]

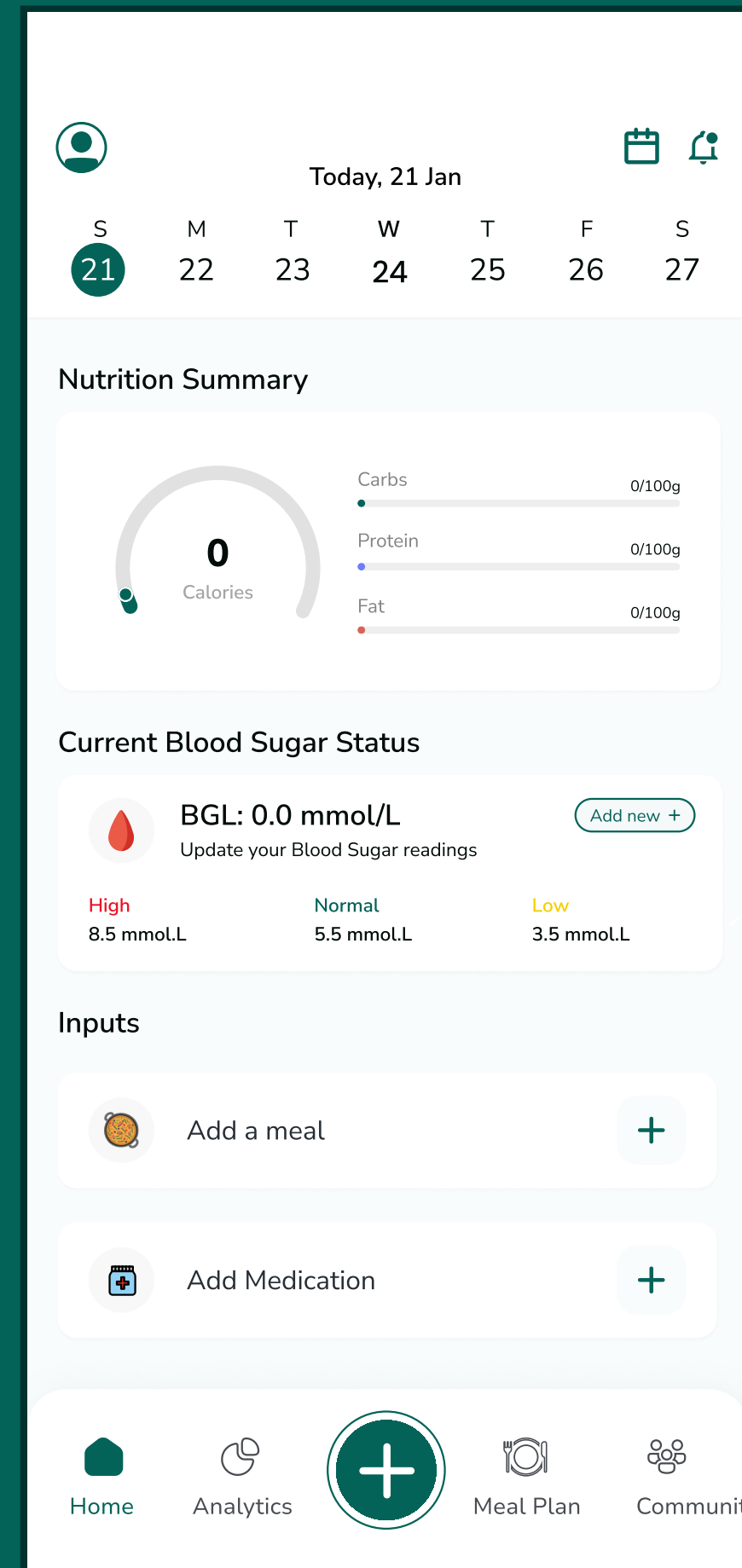
1 2 3 4 5

Strong disagree Strongly agree



Feedback Update: Home

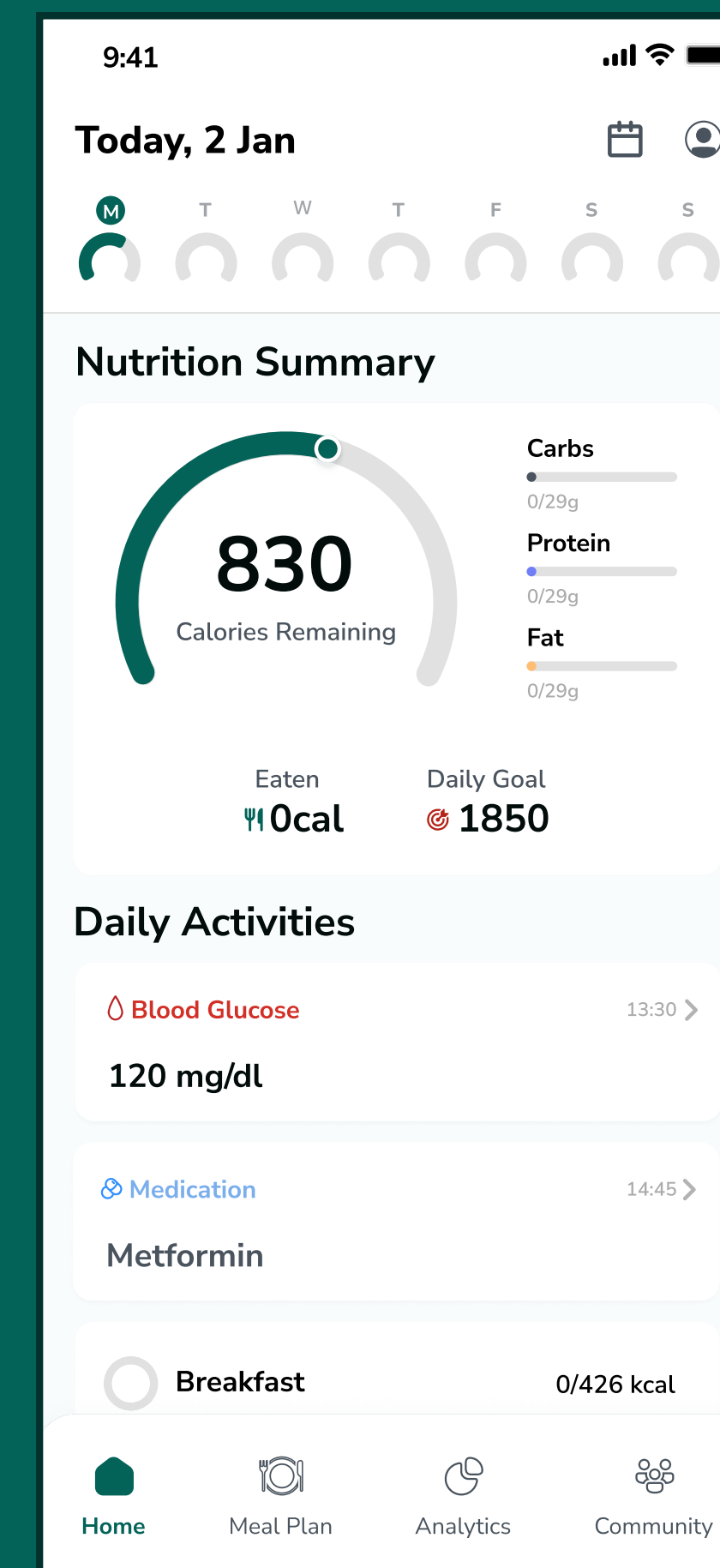
Before



Challenge

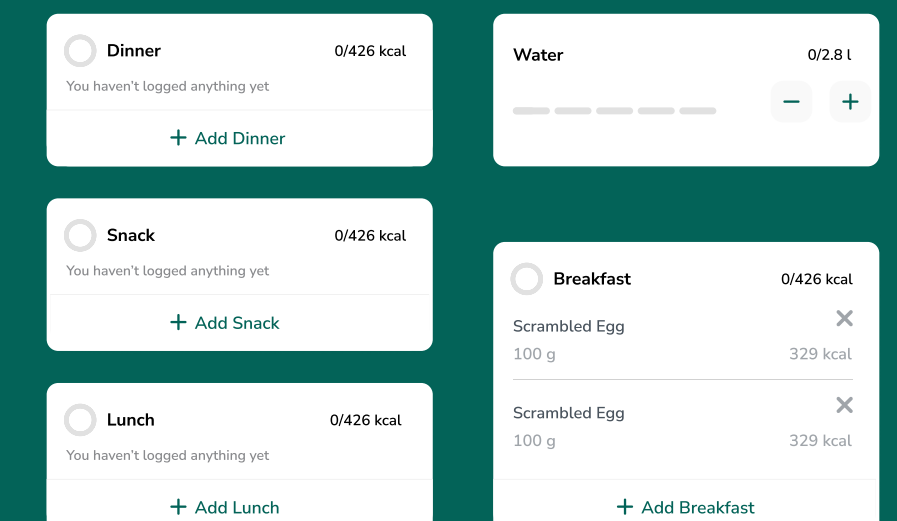
- Font-sizes were too small and wasn't easy to read.
- Add new button isn't easy to see.
- Add meal process was too long.
- Fab button did not seem necessary after testing

After



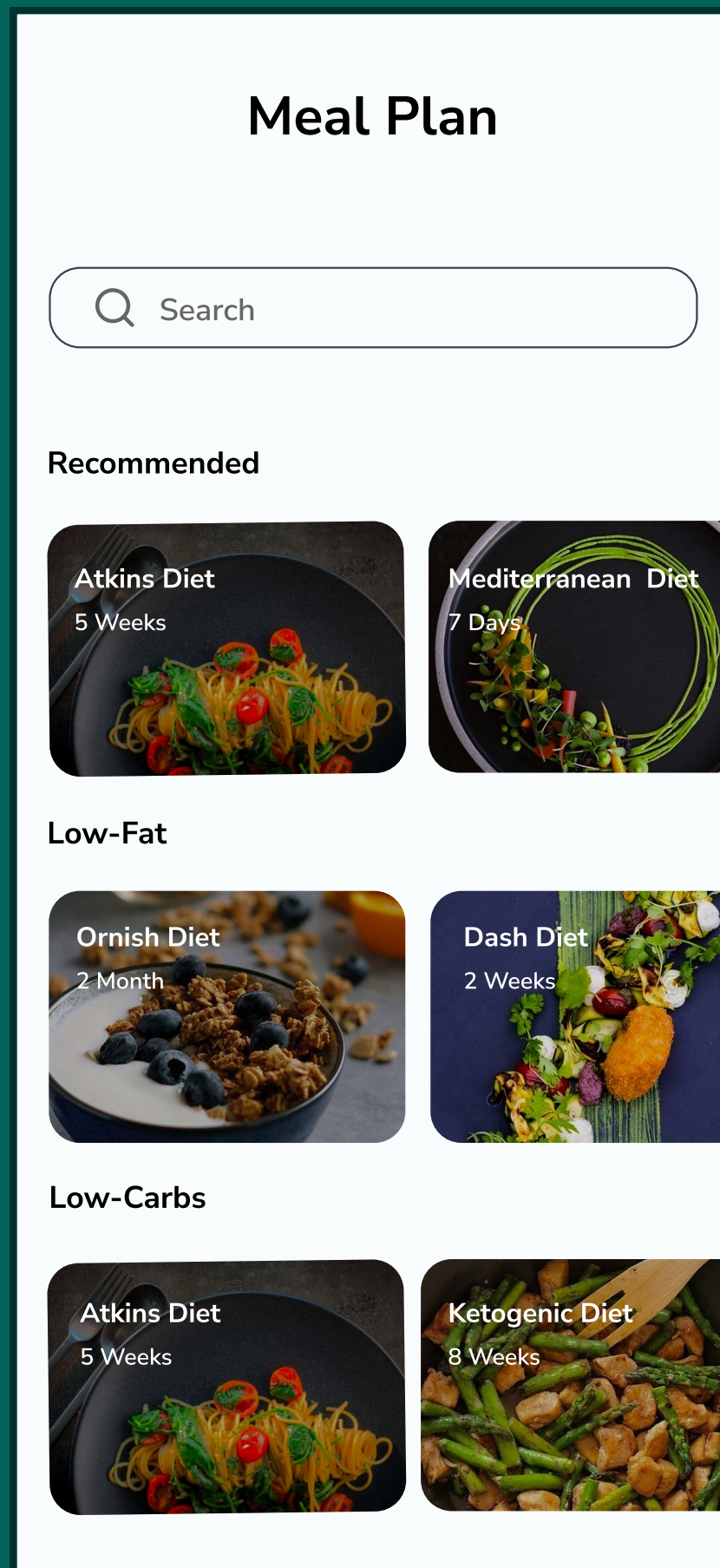
Approach

- Increase in fonts for readability.
- Users can easily track their meal by logging breakfast, lunch or dinner directly.
- Users can easily see a list of daily activities which includes add blood glucose level
- Simplified the process so the fab button wasn't necessary anymore.



Feedback Update: Mealplan

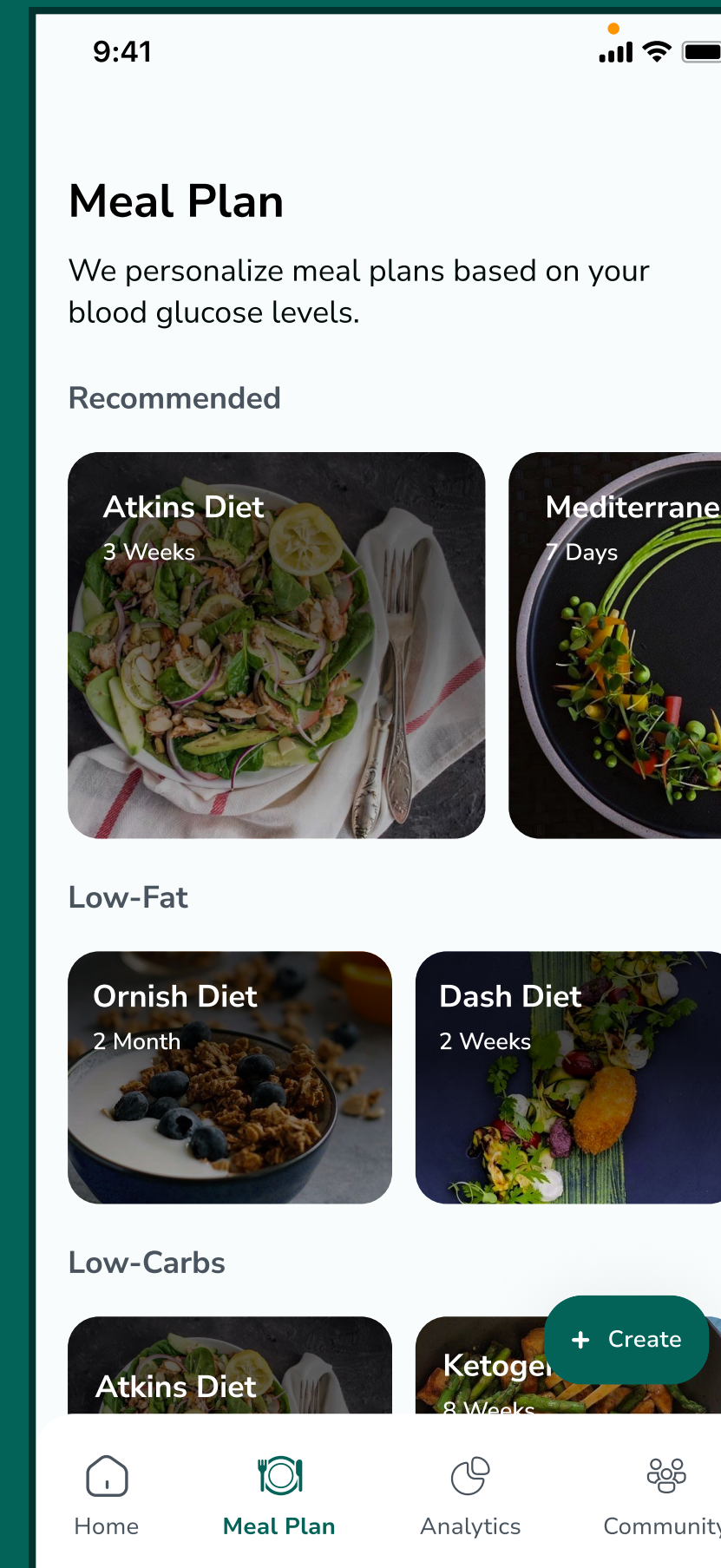
Before



Challenge

- There was no direct text stating that the meal plan is customised based on their blood glucose.
- Multiple meal plans options which made it difficult to select from.

After



Approach

- Addition of a text showing the meal plan is tailored based on their information.
- We reduced the options for each categories and the search bar wasn't needed anymore.

Feedback Update: Mealplan

Before

Create Meal Plan

Give your Plan a name

Pick your Schedule

April 2022 > < >

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

Next

Challenge

- Text Field wasn't added
- no where to add image

After

Create Meal Plan

Give your Plan a name

Add image for your meal plan

Pick your Schedule

April 2022 > < >

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

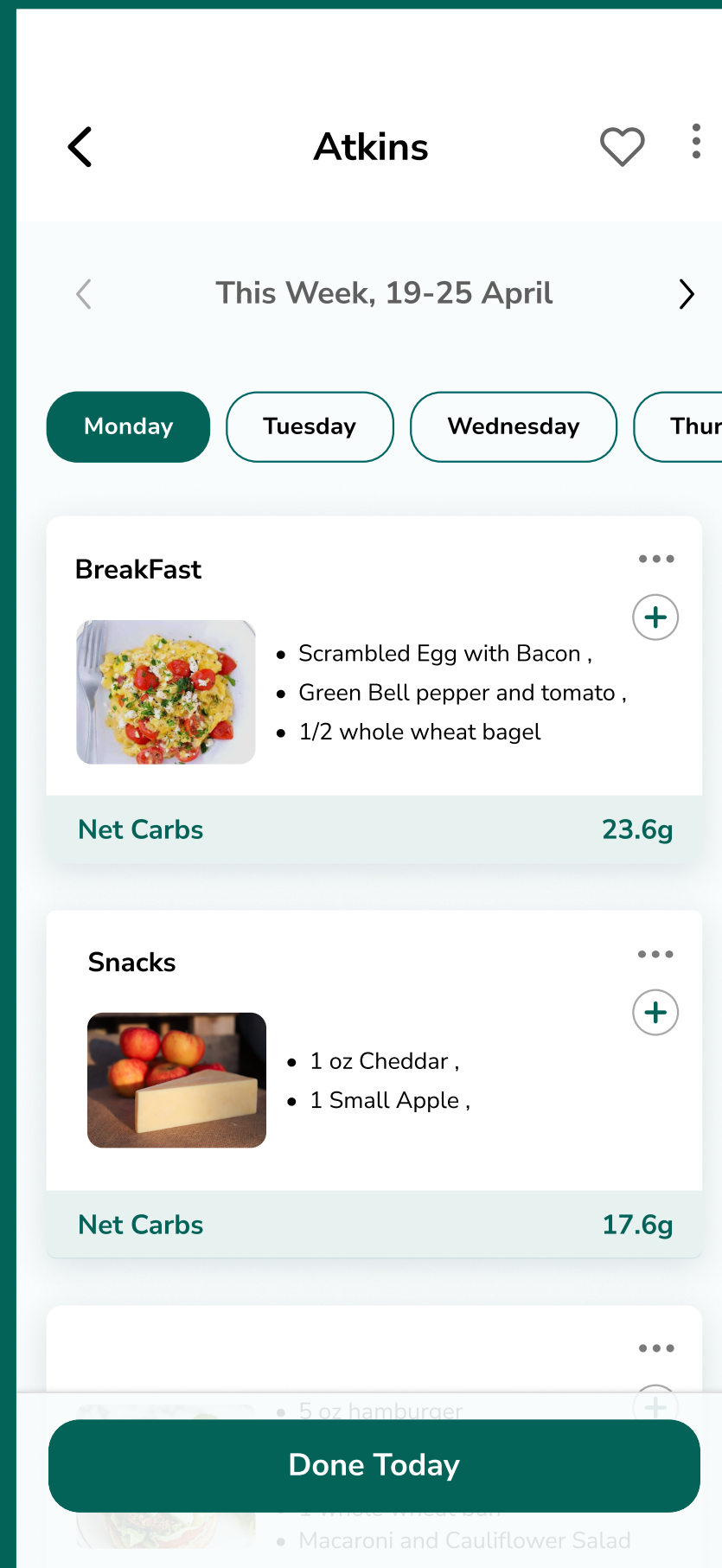
Next

Approach

- Text field is now available in the placeholder.
- Cover Images for the meal plan can be added.

Feedback Update: Mealplan

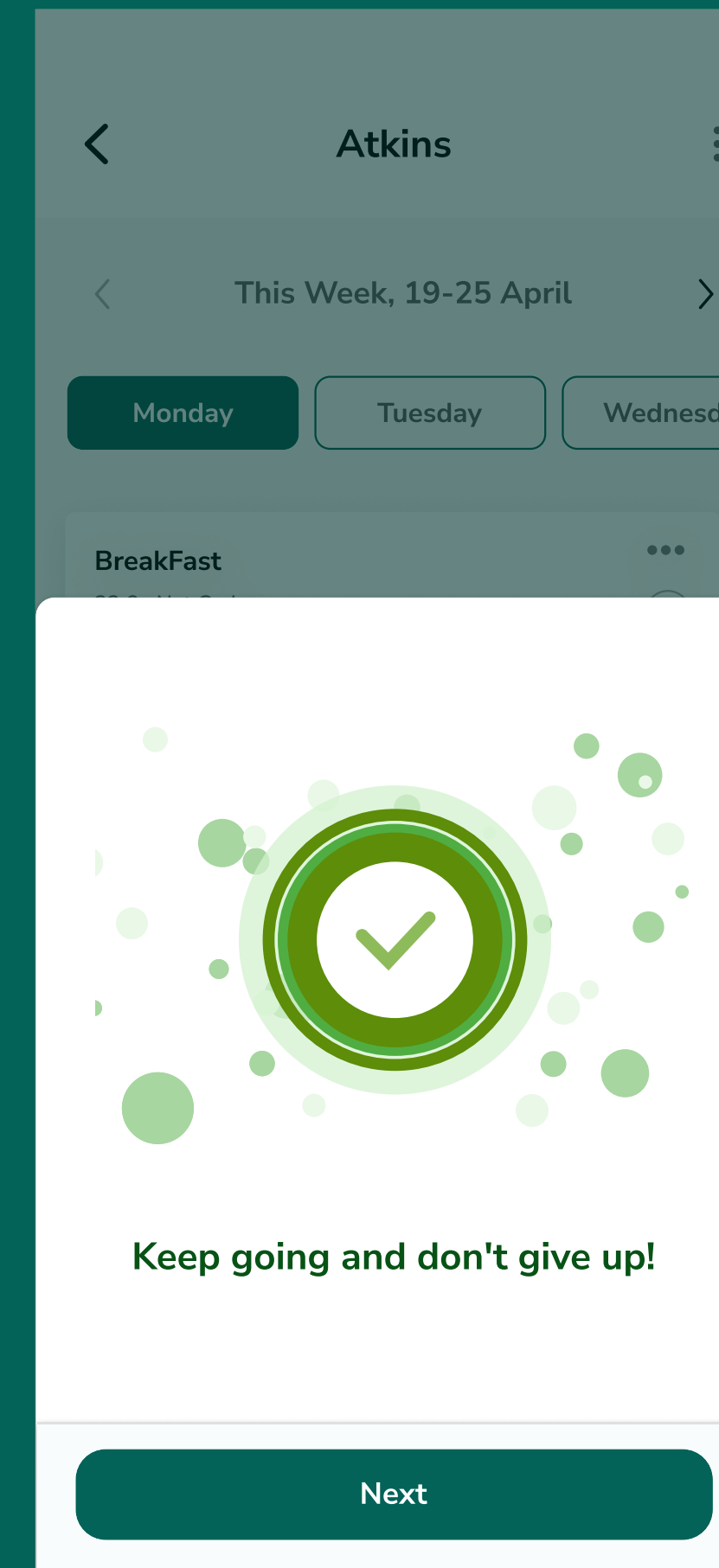
Before



Challenge

- After adding a meal, completing a mealplan there was no feedback showing meal has been added

After



Approach

- Adds feedback and encouragements after each day.

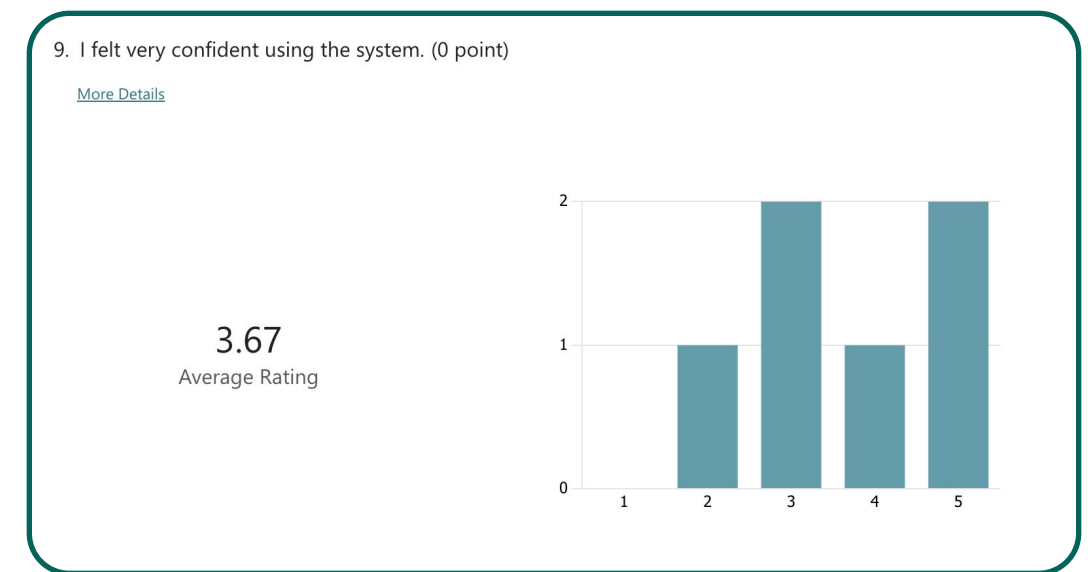
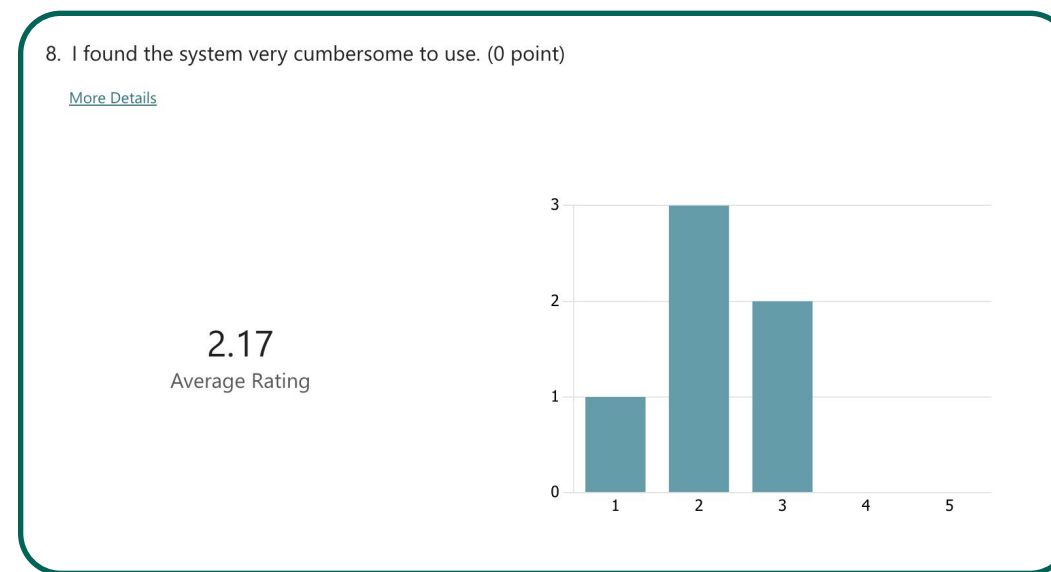
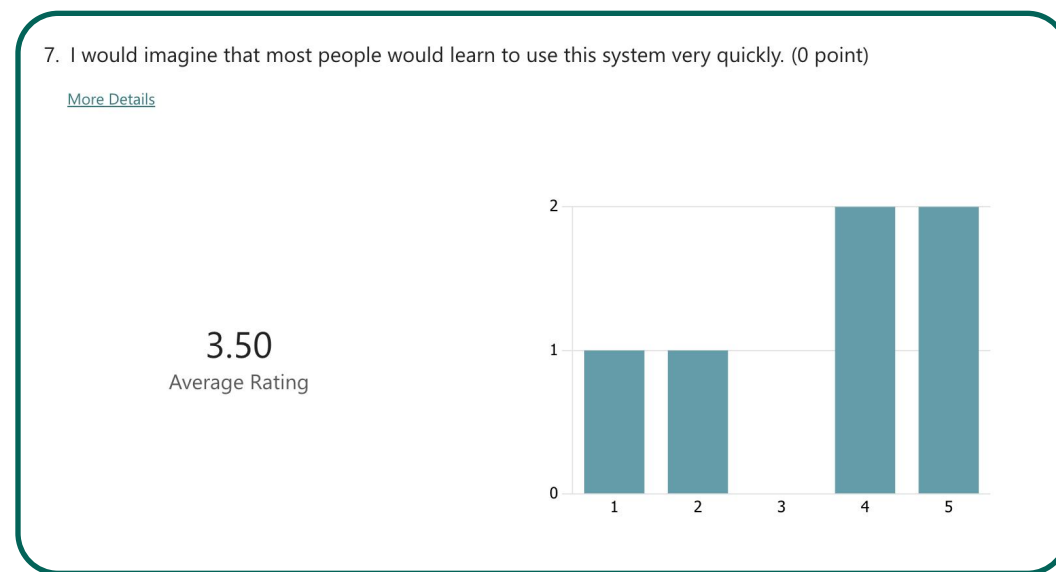
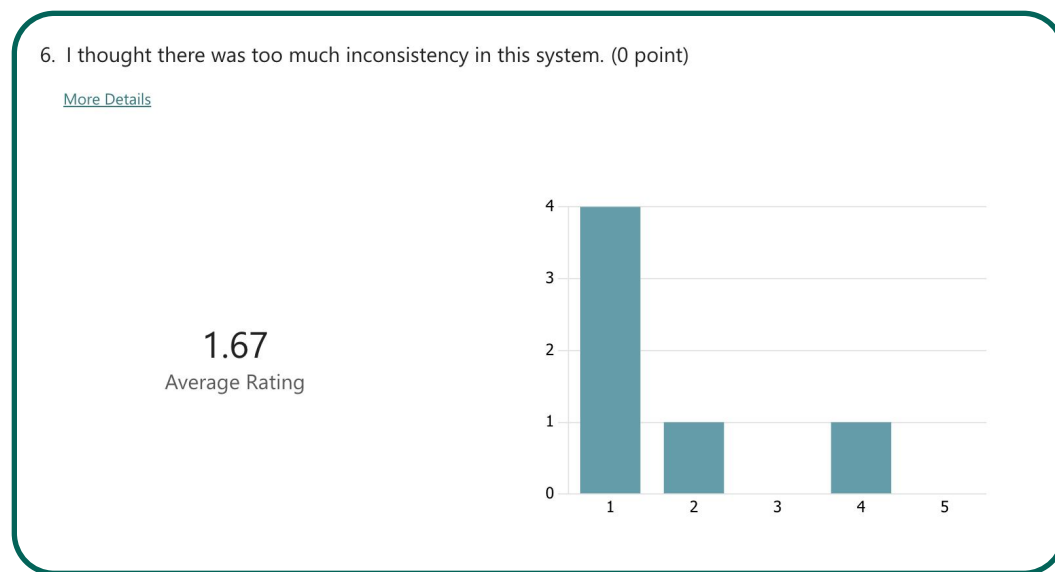
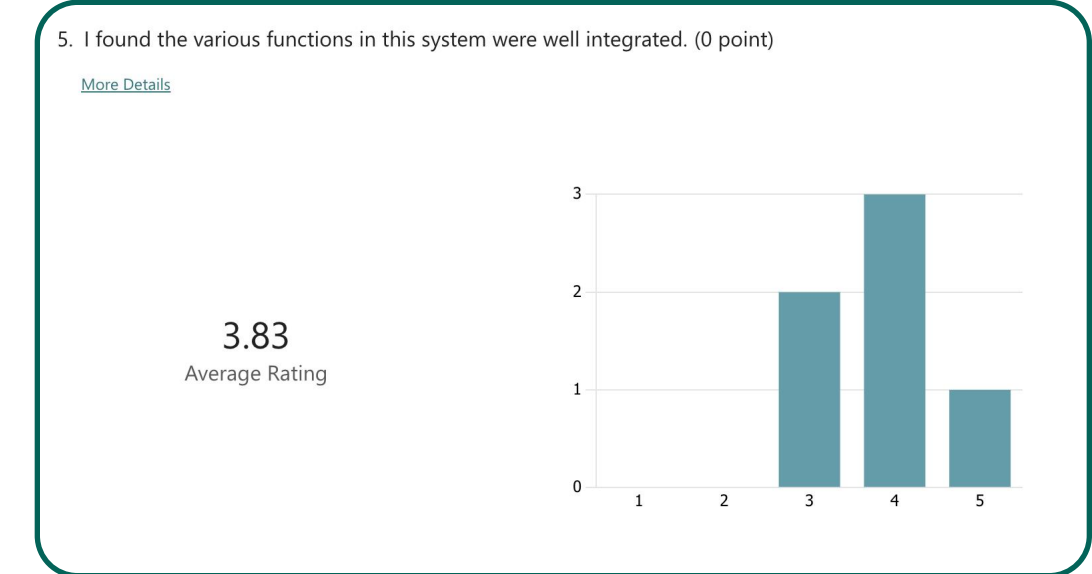
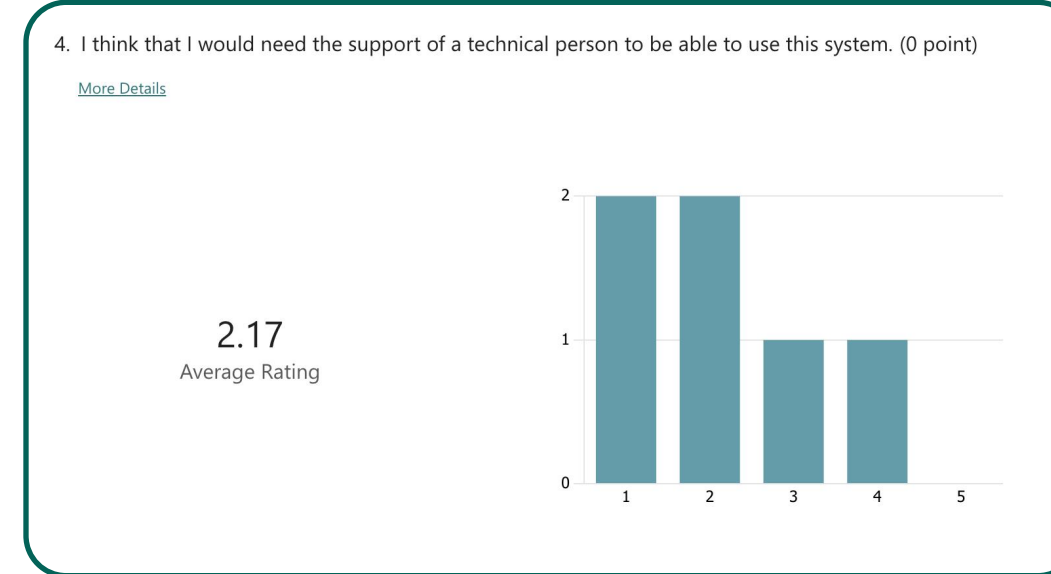
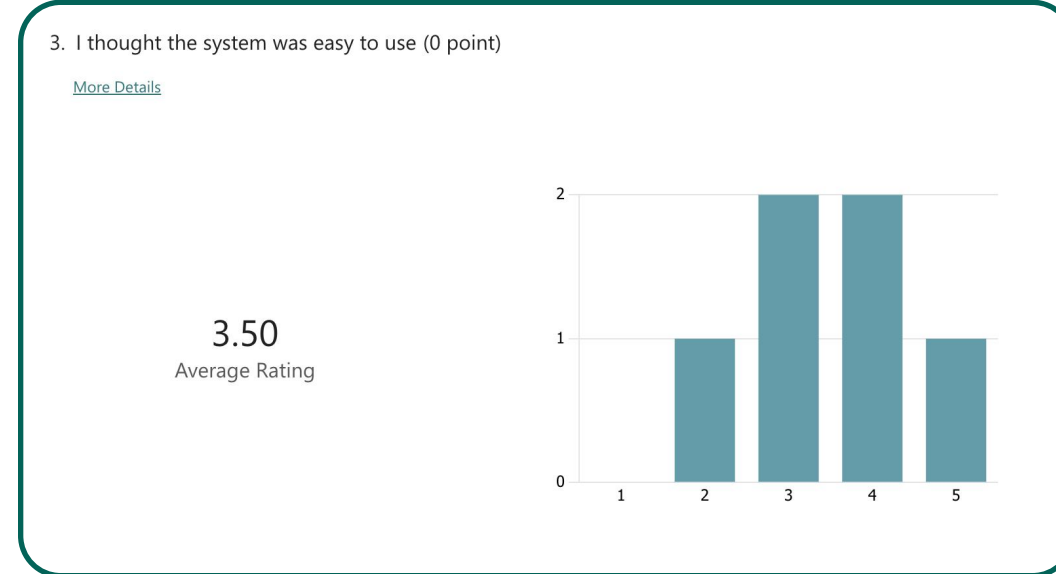
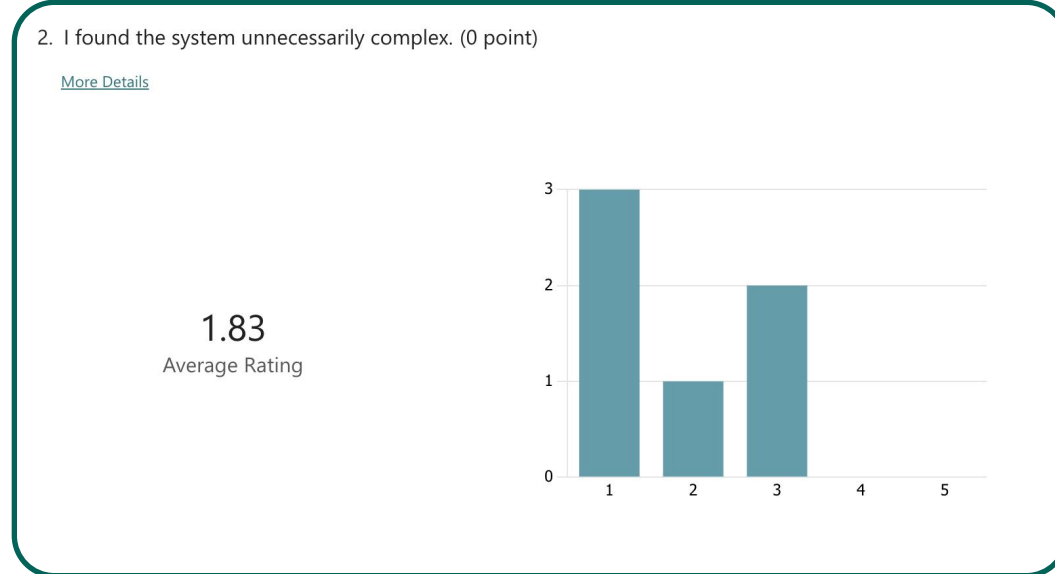
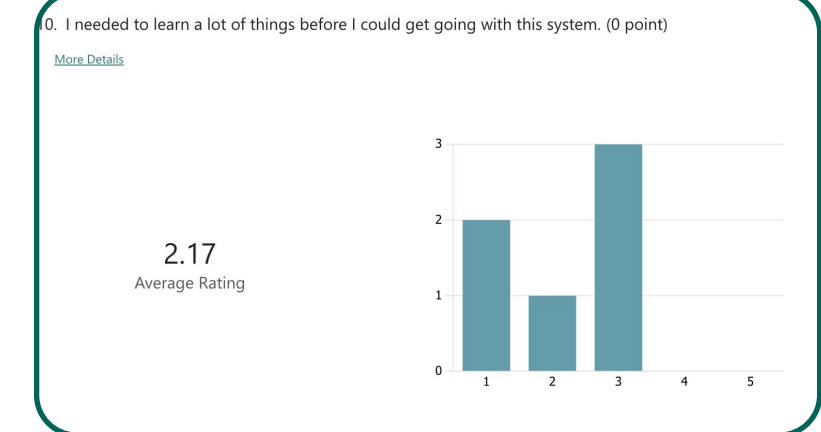
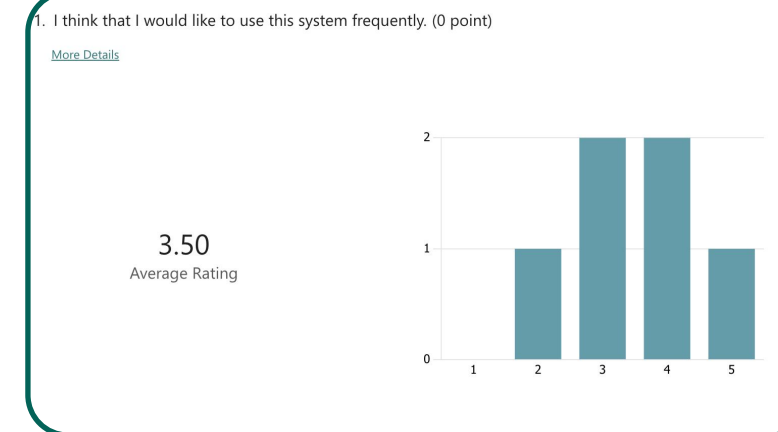
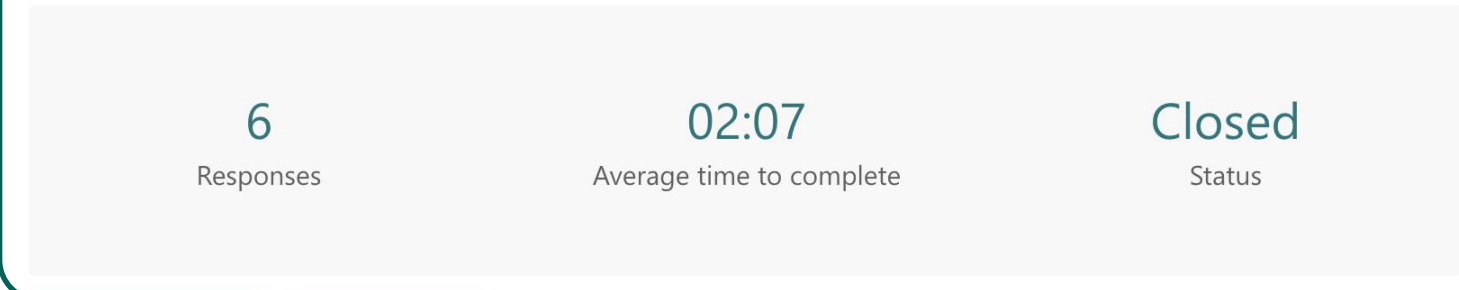
User Testing Round 2

Second SUS Testing

Got a mixed review for the first round of Test

SUS SCORE = 70%

Carbs Buddy System Usability Scale (SUS) - T2



Future Enhancements

Next Steps

- Connecting healthcare and nutritional professionals.
- Option to connect with a wireless bluetooth glucose meter for automatic readings.
- Create hangout sessions from community engagements
- Interaction with voice commands and receive hands-free assistance from Siri.

