Communicating Pain with Digital Tools

My Roles
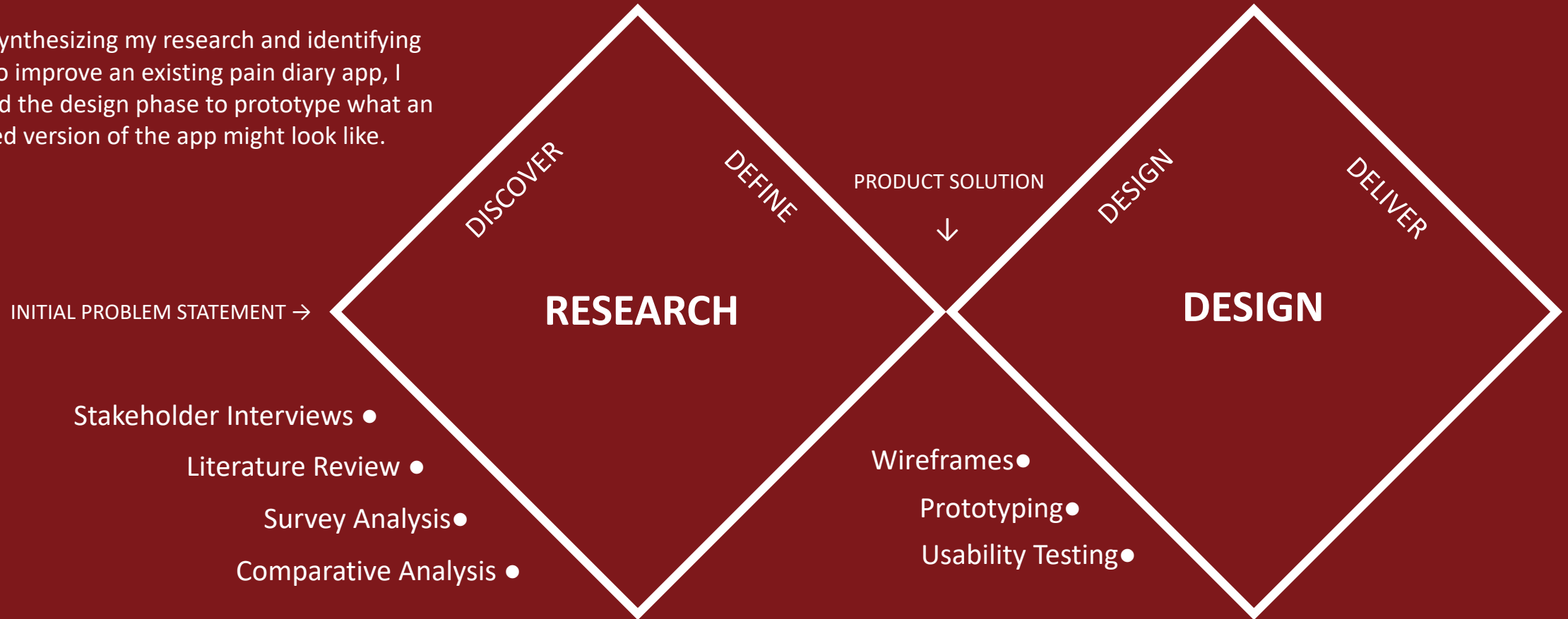Researcher, Designer

Project Brief
For this project, I was tasked with researching and designing a solution to help patients better communicate their pain to healthcare professionals. Specifically, I identified pain points in an existing application and provided recommendations on how to improve it.

Project Scope: Double Diamond Framework

For this project, I first conducted discovery research to understand the problem space of communicating pain in a healthcare setting.

After synthesizing my research and identifying ways to improve an existing pain diary app, I entered the design phase to prototype what an updated version of the app might look like.

DISCOVER

DEFINE

PRODUCT SOLUTION
↓

DESIGN

DELIVER

RESEARCH

DESIGN

INITIAL PROBLEM STATEMENT →

Stakeholder Interviews ●

Literature Review ●

Survey Analysis●

Comparative Analysis ●

Wireframes●

Prototyping●

Usability Testing●

Problem Statement

How might we use digital tools to help patients facilitate better communication about their pain?

Chronic pain diminishes quality of life and requires sustained communication between patients and physicians for effective management.

In 2019, **20.4%** of U.S. adults reported suffering from chronic pain, with **7.4%** of adults reportedly suffering from high-impact chronic pain that limits life and work activities. [1]

Chronic pain is one of the most cited reasons Americans seek out healthcare, and the condition is related to decreased quality of life, opioid dependence, and poor mental health.

Pain management is a complex and time-consuming process that requires collaboration from a team of clinicians to reduce pain, maximize function, and implement safeguards to prevent addiction.

1. Carla E Zelaya et al., "Chronic pain and high-impact chronic pain among U.S. adults, 2019." *NCHS Data Brief*, no 390 (November 2020): https://www.cdc.gov/nchs/products/databriefs/db390.htm.

Project Goal

Update an existing app to help patients better communicate their pain levels to their physicians.
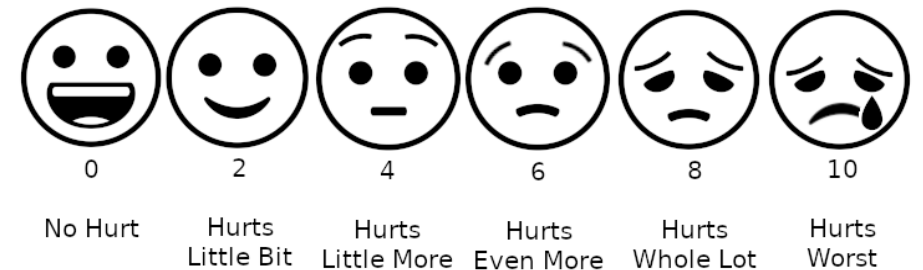
The 1–10 pain scale is an inaccurate gauge of pain intensity. But doctors are more concerned with understanding the nature of the pain and tracking relative progress rather than nailing down an "accurate" number.

I conducted qualitative interviews with pain management specialists and patients to understand how pain is normally communicated.

The current standard to understanding a patient's pain is asking them to rate it on a scale from 1 to 10.

The 1–10 scale doesn't accurately gauge pain, but it does give us some idea of a patient's situation. There is currently no way to accurately gauge pain because it's such a subjective experience as patient's have different levels of pain tolerance.

The reason we use the pain scale is track relative progress. When you institute therapy, you compare the numbers to see if you're making improvement. For example, if a patient starts out at 10/10 pain level, then later goes to 7/10 you know that the patient's pain is getting better.


| 0 | 2 | 4 | 6 | 8 | 10 |
| No Hurt | Hurts Little Bit | Hurts Little More | Hurts Even More | Hurts Whole Lot | Hurts Worst |

Describing the nature of pain is more difficult than establishing its magnitude, which can lead to misdiagnosis and/or prolonged discomfort.

In one interview, the patient injured her knee and visited the doctor. She was asked where it hurt and to rate her pain, but the painful sensation in her knee was hard to describe.

Because of the lack of information, it was assumed she just sprained her knee. When the pain persisted, she got a second opinion and an MRI, and she learned she had torn her ACL — an injury which requires surgery to fix.
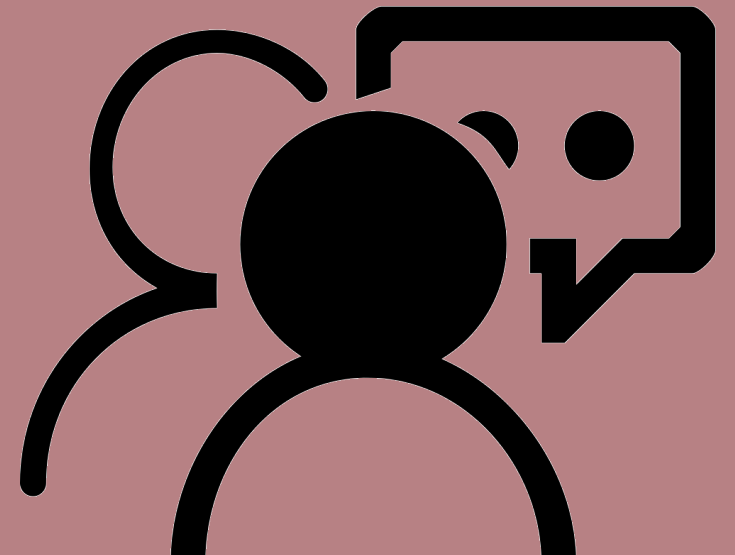
100% of respondents reported using the 1–10 scale to convey the severity of their pain.

Despite the fact that the 1–10 scale is an inaccurate way of evaluating pain, it appears to be the primary method used by physicians.

I sent out a survey to friends and family asking about how their pain was communicated and evaluated when they visited a doctor following an injury.
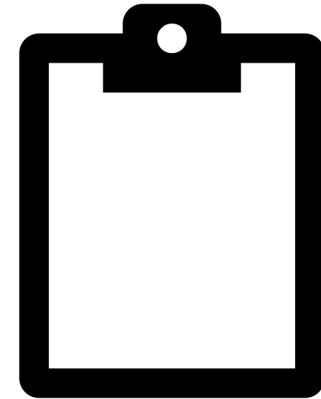
Comparative Analysis

CatchMyPain

CatchMyPain is an intelligent pain diary app that helps you to keep track of your pain. For this project, I've decided to revise this app in order to better meet the needs of people suffering from chronic pain.
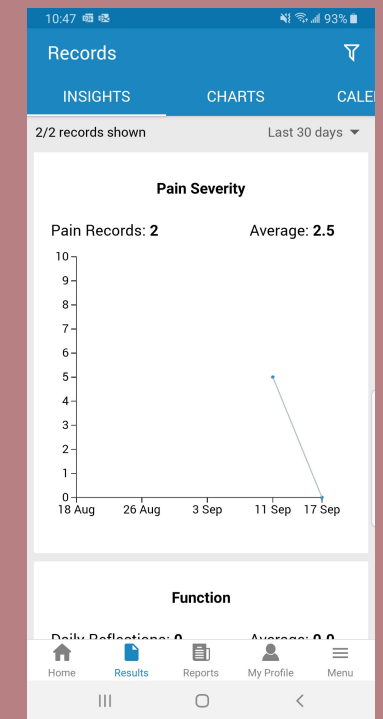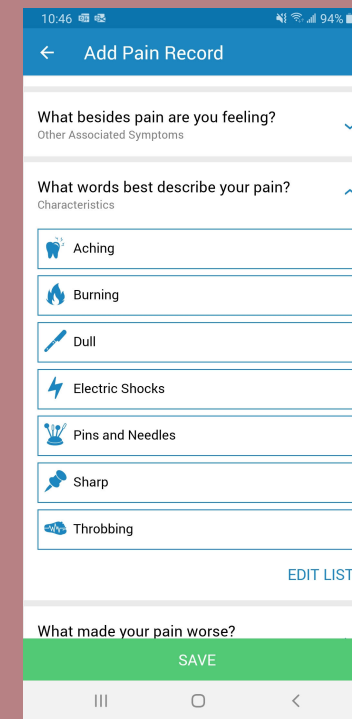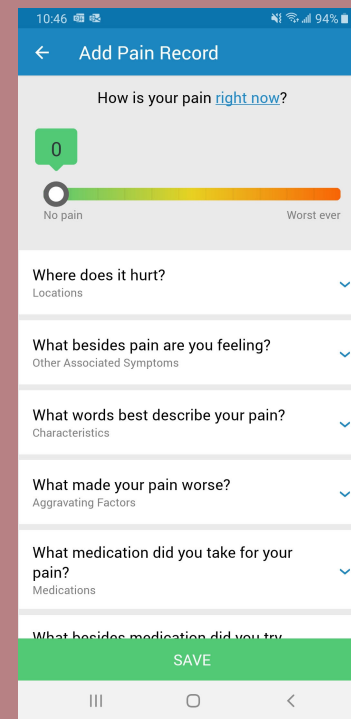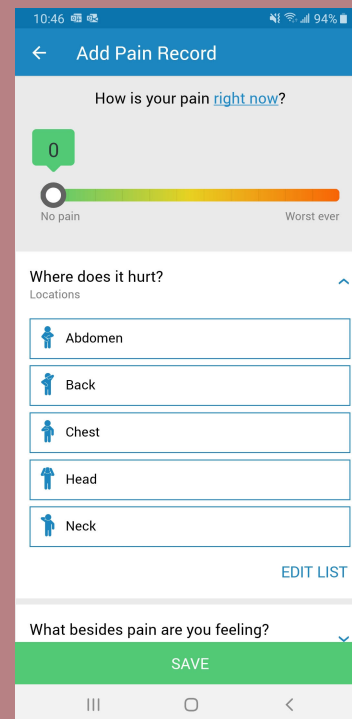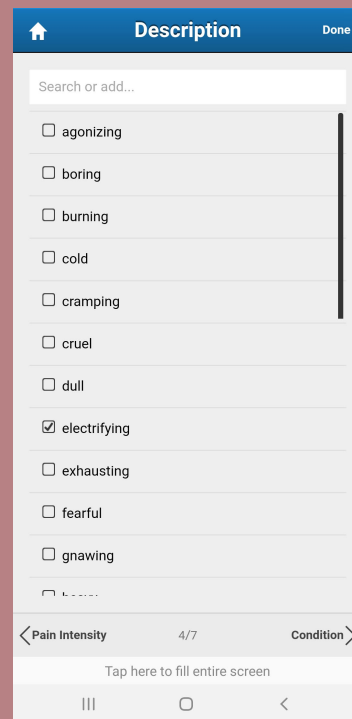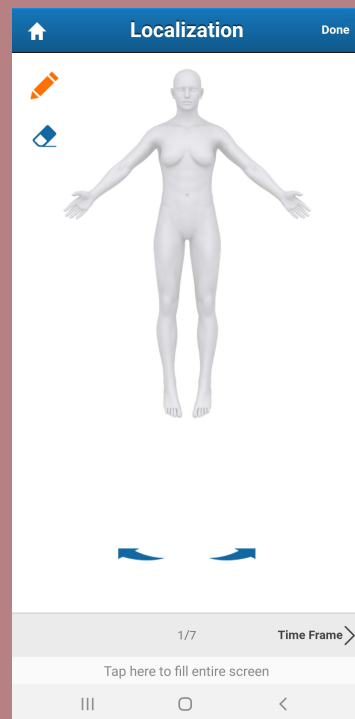
The app uses a mix of scales, images, and lists to evaluate user pain, resulting in a drawn-out and complicated process.

CatchMyPain asks the user to input a large amount of information documenting the different dimensions of the user's pain.

I asked a recently injured friend of mine to use the app, and it appeared to be a taxing process going from section to section, using drop down menus and scrolling through different options to articulate what adjectives best describe the pain.

Similarly to the standard 1–10 pain scale, the app also seeks to nail down the patient's pain intensity level.
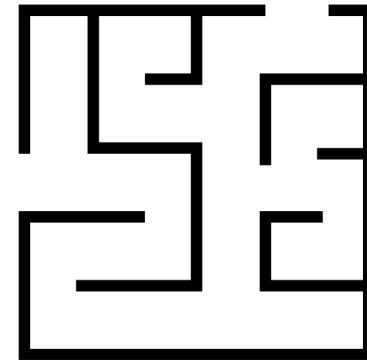
Our solution

An app that asks the user a rapid-fire series of binary description questions in order to quickly compile a snapshot portrait of the user's pain.

Prototypes

I wanted to create an interface that is feasible with low cognition rather than having the user read through dense text and sort through many different categories.

Design Requirements:

The app should seek to convey the nature of the pain rather than nailing down a concrete pain value.

The system should facilitate faster and more efficient digital communication between patients and their doctors.

Even if patients were able to have a detailed, long-term record of their pain, a physician is necessary to receive diagnoses, referrals, or prescriptions. Therefore, the system should also be able to digitally relay all relevant information to the user's doctor.