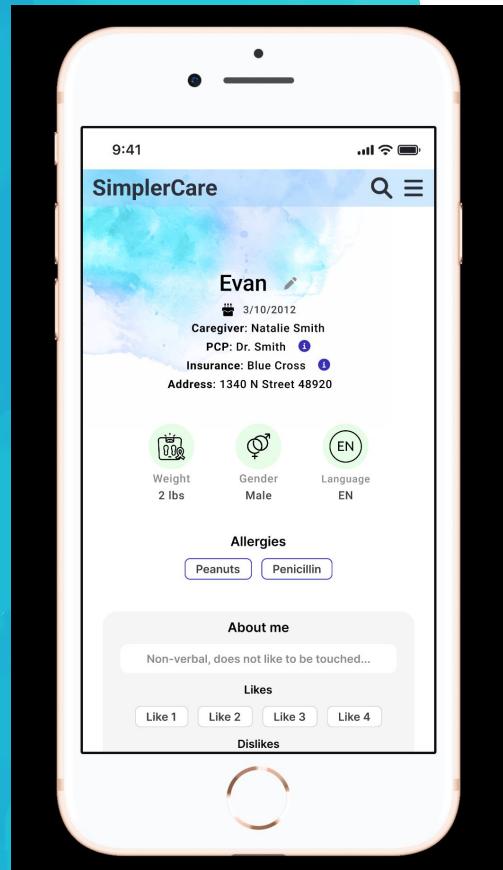
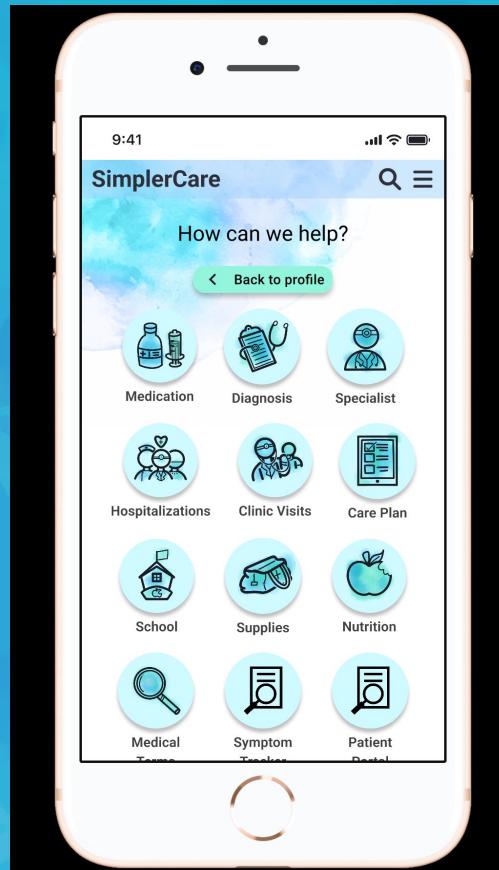
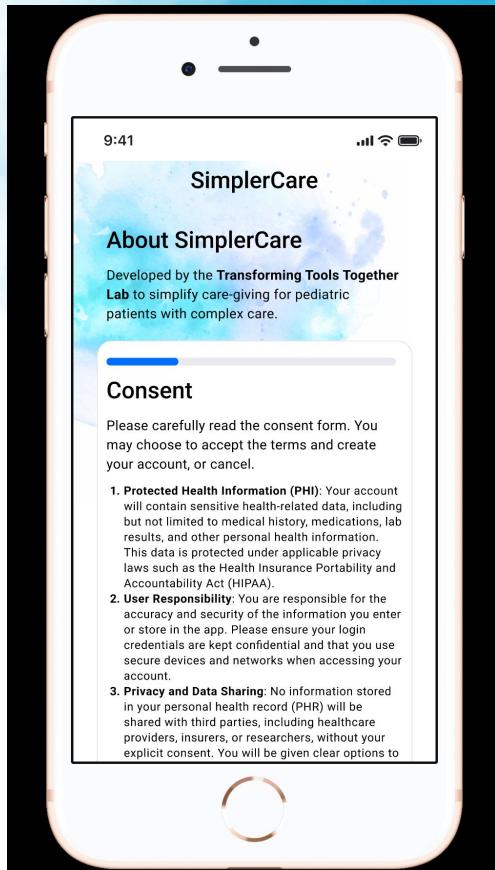


# SimplerCare App

Development of a Care Coordination Tool  
to Support Better Outcomes in Children  
with Complex Medical Care Needs



Transforming  
Tools Together



# Hypothesis

A user-friendly, accessible care coordination tool tailored for families of children with CMC (complex medical care) in underserved areas will improve care integration, reduce caregiver burden, and enhance communication between families and healthcare providers.

# Project Aims

1. Develop a prototype for a care coordination mobile application based on caregiver and provider input that is accessible, user-friendly, and adaptable to various healthcare settings.
2. Refine the tool based on feedback from caregivers, PCPs, and nurse coordinators to ensure it meets the needs of all stakeholders.
3. Evaluate the tool's usability, content, and feasibility for integration with electronic medical records (EMRs).

# Project Aims (continued)

4. Assess the impact of the tool on caregiver burden and provider workload and child outcomes as defined here:

- Health and Clinical Outcomes
- Reduction in hospitalizations and emergency department visits
- Improved management of chronic conditions (e.g., asthma control, seizure frequency)
- Medication adherence and accuracy
- Timeliness of care (e.g., fewer delays in referrals or treatments)
- Quality of Life and Functioning
- Child's physical and emotional well-being
- Developmental progress
- School attendance and participation
- Family and Caregiver Outcomes
- Caregiver burden and stress levels
- Caregiver satisfaction with care coordination
- Perceived support and empowerment
- Time spent navigating care systems.
- System-Level Outcomes
- Care plan completeness and usage (e.g., shared plans of care)
- Care team communication and collaboration.
- Equity in service delivery

# Individual Aims

1. leading stress-reduction applications (e.g., Calm, Headspace) to identify successful design patterns and content strategies applicable to the complex care context.
2. **Develop the ethical gamification prototype:** Design the gamification feature (meditative sand landscape, rock stacking, or Bonsai tree growth), ensuring the mechanics prioritize **intrinsic motivation** (expression, self-reflection) and mitigate ethical risks (manipulation, trivialization) identified in the secondary research.
3. **Curate and validate affirmation content:** Gather, and integrate positive affirmation statements and supportive messaging specifically tailored to the emotional needs and stressors of complex medical care caregivers.
4. **Evaluate usability and emotional impact:** Conduct targeted user testing to assess the usability and perceived psychological effectiveness of the gamification feature in reducing stress and improving feelings of validation/support

# Broader Impact

- **Individual & Family Level:**
  - Reduce Caregiver Burden and stress levels.
  - Improve Caregiver satisfaction, perceived support, and empowerment.
  - Enhance Child Quality of Life and functioning (physical and emotional well-being).
- **System & Clinical Level:**
  - Improve Medication adherence and accuracy.
  - Enhance Care Team Communication and Collaboration to increase care plan completeness.

# Genre and Audience

**Genre:** Mobile Health Application and Care Coordination Tool.

**Primary Audience:**

- Families/Caregivers of children with Complex Medical Care Needs (CMC), Secondary

**Audience (Stakeholders):**

- Primary Care Providers (PCPs) and Nurse Coordinators.
- Hospital Systems and Research Partners (MSU/Michigan Medicine).

# Logline Statement

Simpler Care is a mobile care app that serves as a coordination tool to empower caregivers of pediatric patients with complex medical needs by integrating ethical gamification like meditative rock stacking, bonsai tree growth, to provide psychological support and reduce the stress and burden on the caregiver through curated positive affirmations.

# Secondary Research (ongoing)

Source: "Gamification in Apps and Technologies for Improving Mental Health and Well-Being: Systematic Review".

This paper provides important data on what gamification is currently being applied in the mental health space versus what elements should be applied in mental health tools.

- Misaligned Implementation: Current application of gamification to mental health does not align with the critical trend observed in the general health and well-being literature that relies heavily on a "behaviorist approach... extrinsic motivators" (for example: just using points/badges).
- Most Common Gamification Elements: The most commonly used gamification elements were levels or progress feedback (80%) and narrative or theme (48%), while badges or achievements (24%) and social cooperation (10%) were far from dominant.
- Research Gap: Despite this varied application, research suggests that the use of gamification in mental health is not driven by health behavior change theory, and many researchers may treat gamification as a "black box" without considering its underlying psychological mechanisms.

# Secondary Research

Source: A Gamification Model to Encourage Positive Healthcare Behaviours in Young People with Long Term Conditions"

This paper discusses the reasoning and framework for using gamification to address the critical issue of transitional care for adolescents.

The document systematically breaks down how various game dynamics serve as mechanisms to promote complex, specific self-care behaviors:

- Feedback Dynamic (Appointments/Bonuses): This dynamic uses rewards to encourage crucial behaviors like regular contact with the clinical care team and ensuring adherence to treatment.
- Progression Dynamic (Levels/Achievements): This provides motivation and demonstration that the young person is attaining "more advanced knowledge and skills as they mature," confirming satisfactory progress toward adult care transfer.
- Digital Success: Previous research has shown that mHealth apps using gamification were successful in improving the daily average frequency of blood glucose measurements by 50% in adolescents with Type 1 Diabetes.

# Secondary Research

Source: "Serious Games and Gamification in Healthcare: A Meta-Review".

This meta-review provides strong evidence regarding research gaps, ethical concerns, and future trends about gamification in healthcare.

The current research highlights limited research on the ethical and legal implications of serious games and gamification for health. A major challenge is ensuring informed consent and protecting patient privacy and sensitive information when these gamification interventions may potentially be used to manipulate user behavior.

This source also provides a concise summary of where gamification is currently focused in healthcare:

- Serious games and gamification are used to address a wide range of conditions, primarily categorized into chronic conditions, mental health disorders, and physical rehabilitation.
- The overall trend is shifting toward the use of mobile and digital platforms, Virtual Reality (VR), and Machine Learning to personalize and adapt interventions.

# Persona

# Production Goals

Conduct a Competitive Analysis: complete a competitive analysis with stress-reliever apps such as Calm and Headspace to identify successful design patterns and gamification strategies applicable to the complex care context.

Develop Visual Sketches: Create design options and multiple sketch options for the three gamification components—a bonsai tree rooted in sand, a sand landscape, and rock stacks.

Collect and Create Affirmation Content: create a list of positive and supporting messaging specifically tailored to the needs of complex medical care caregivers.

Develop a Gamification Prototype: Design and build the gamification feature with curated affirmations (meditative sand landscape, rock stacking, or Bonsai tree growth).

Conduct Usability and Accessibility Testing: Conduct targeted user testing to assess the usability and perceived psychological effectiveness of the gamification feature in reducing stress and the burden on the CMC caregiver.

# Competitive Analysis

# Affirmation Lines (For the Gamification Screens)



Prototypes for gamification including 3 options - A bonsai, sand layers and rock stacks that all have affirmative phrases on them. The phrases include things like:



I Matter.

I got this.

I am doing an amazing job.

I really do know best.

I am the key to your child's success.

I am rocking this.

This is hard.

You are worthy.

Your relationship with your child is beautiful.

One step at a time.

Trust your intuition.

Take a breather.

Take a moment.

You care so much.

You are strong.

MY gut is not wrong.

I will get through this and anything else in my path.

I am not alone.

As a parent of a special needs child, my journey is different.

I know my child best.

My child is strong.

# Affirmation Lines (For the Gamification Screens)

Things will get better.

I can take time for myself.

I am growing.

Start where you are, use what you have, do what you can.

Thank you for supporting your child.

It is okay to acknowledge this situation sucks.

Little by little, a little becomes a lot.

I am going going to be okay.

It is okay to be angry.

I have all I need to become the best version of myself.

My courage is inspiring.

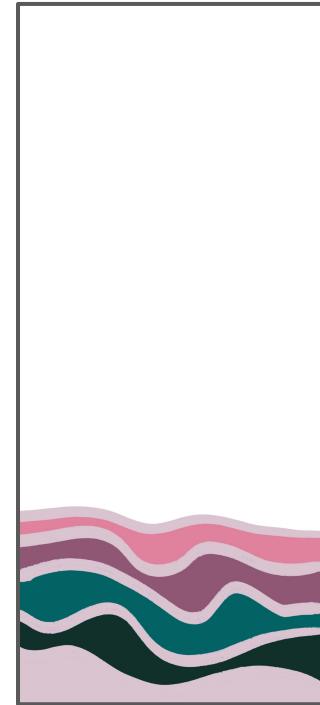
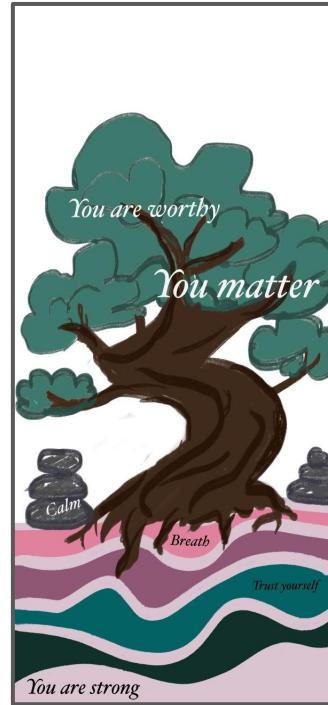
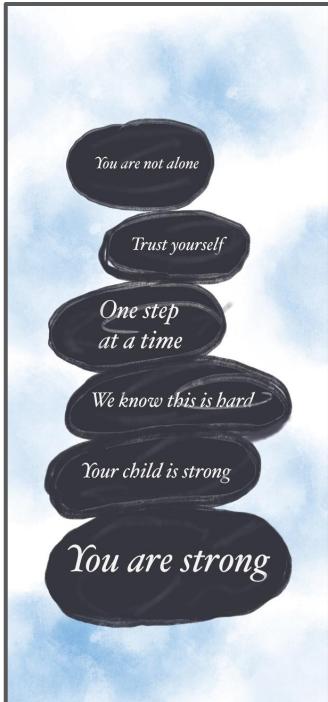
I am brave.

My feelings are real and I can work with them.

I am resilient; I've overcome things before.

It's okay to ask for help.

# Initial Sketches

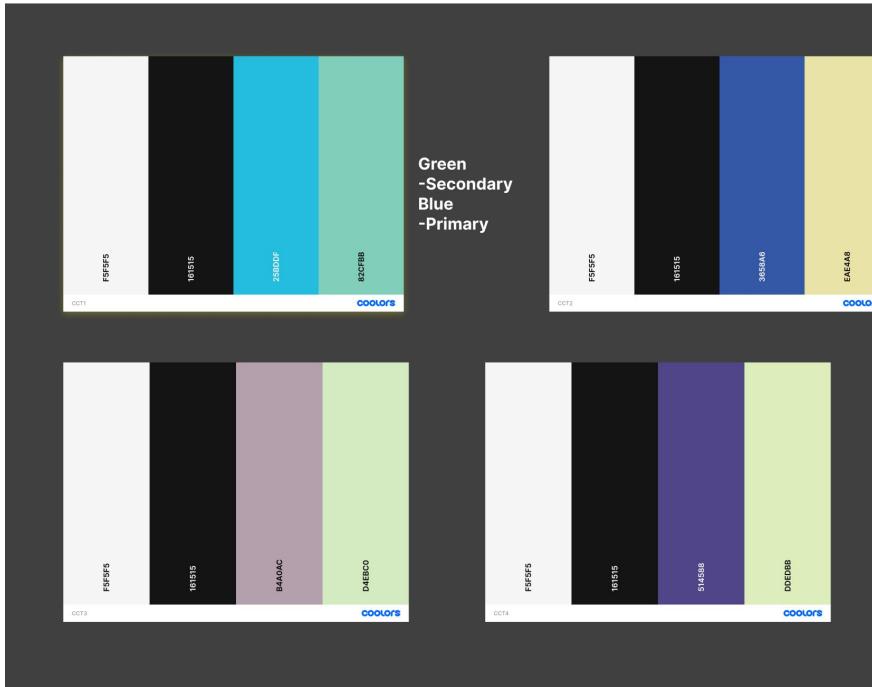


# Color Scheme

## Key Soothing Colors

- **Blue:** Widely considered beneficial to the mind and body as it slows human metabolism and produces a calming effect. Blue is strongly associated with tranquility and calmness. In a medical environment, seeing the color blue can cause the body to produce calming chemicals(Cerrato, 2012).
- **Green:** Green is very restful for human eyes. The color can have great healing power and symbolizes harmony between the body and the mind. Physiologically, green balances people's emotions, creating a sense of calm. Hospitals utilize light green rooms because they too are found to be calming to patients (Cerrato, 2012).
- **Turquoise:** Physiologically, turquoise can calm emotions and restore depleted energy levels and boost positive thought (Cerrato, 2012).
- **White:** White is calming as it creates simplicity, organization, and efficiency(Cerrato, 2012). It is associated with cleanliness and sterility (Cerrato, 2012).
- **Pink:** Is one of the most calming colors. Pink is also reassuring, and boosts emotional energies which can decrease the feeling of anger. (Cerrato, 2012).

# Color Scheme



# Prototype: Figma Prototype

The image displays a grid of 14 mobile application prototypes from Figma, arranged in two rows of seven. Each prototype is represented by a smartphone screen showing a different feature or page of the app. A circular user icon, featuring a stylized 'Y' and 'C' logo, is overlaid on each screen.

**Onboarding (Row 1):**

- Onboarding1:** Three screens showing the initial setup process, including consent forms and profile creation.
- Profile Page:** Shows a user profile with a photo, name, and birthday.
- Navigation Page:** A home screen with various icons for medications, specialists, and visits.
- Medication Page:** A list of medications with details like name, strength, and frequency.
- Medical Terms:** A search interface for medical terms.
- Nutrition Page:** A nutrition tracking section with a calendar and meal logs.

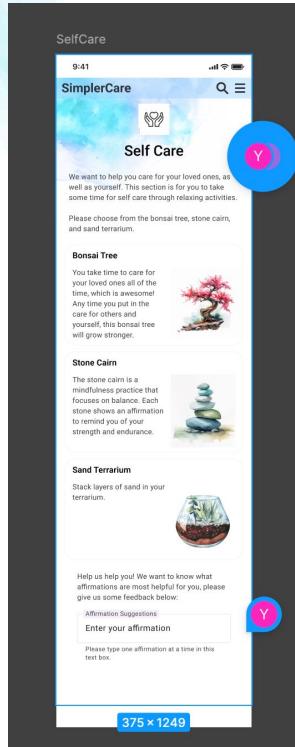
**Core Features (Row 2):**

- Login:** The login screen with fields for Username and Password.
- Diagnosis Page:** A page for managing diagnoses, showing a list of conditions like Anxiety and Diabetes.
- Specialists Page:** A page for managing specialists, showing a list of providers like Dr. Smith and Dr. Jane.
- Visits Page:** A page for managing clinic visits, showing a list of visits and their details.
- Hospitalizations Page:** A page for managing hospitalizations, showing a list of hospitalizations and their details.
- Care Plan Page:** A detailed care plan page with sections for medications, treatments, and emergency plans.
- Patient Portal:** A patient portal page with sections for Market, Health, and Alerts.
- School:** A school management page with sections for Staff, Students, and Therapies.
- Self Care:** A self-care page with sections for Health, Medication, and Therapies.

**Annotations:**

- Onboarding1:** Includes a note: "Share profile with Caregiver & we'll invite them to create their own account. Let the user choose an email and password."
- Profile Page:** Includes a note: "Tell us about you so we can provide the best care for your patient."
- Navigation Page:** Includes a note: "How can we help? Find a specialist, view medications, or check in on your patient's health."
- Medication Page:** Includes a note: "Patients stick on a day and the corresponding medications update the calendar."
- Medical Terms:** Includes a note: "Search for medical terms related to your patient's condition."
- Nutrition Page:** Includes a note: "Add a new symptom to March 13, 2023. Add a new symptom to March 13, 2023."
- Diagnosis Page:** Includes a note: "Detailed Info for each diagnosis:
  - who's managing it
  - when diagnosed
  - what treatment?
  - Additional info"
- Care Plan Page:** Includes a note: "1. Code Status:
  - Define the ICD-10 code for the intervention (Three separate parts)
  - Specify which treatments are included in the intervention, as ICD-10 treated)
  - Define the target patient
  - Define the clinical outcomes
  - Define the preferred route
  - Preferred hospital or emergency room
  - Preferred physician
  - Preferred treatment plan
  - Provide examples with samples
  - Specify precautions"

# Gamification Prototype

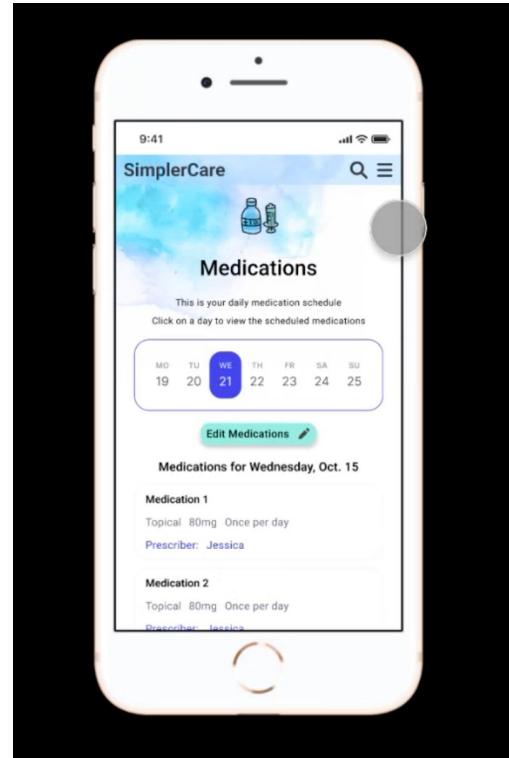


## User Insights and Findings

I conducted this user test to evaluate the usability and user experience of the SimplerCare App. The design challenge for this app is to create a tool that simplifies the complex medical needs management for the guardians and caregivers of pediatric patients with complex care needs. The tool will also include a gamification piece that reduces the stress and burden for the caregiver. This phase of testing was to focus on the navigation flow of the app and the potential stress relieving values of the self care features (gamification screens, art visuals, and affirmations)

## User Insights and Findings

For this phase of testing, I engaged one participant, who is a key stakeholder for this project and has an in-depth understanding of complex medical care situations, the target audience, and the app's overall goal. Utilizing this participant gave me the opportunity to gather very helpful qualitative feedback about the design of the app and the foundation of the idea, before testing it with primary caregivers.



## Diagram and Description of the Observation Location

The observation took place remotely via a video conferencing tool, Microsoft Teams

1. I the interviewer/moderator: Facilitated the session, provided prompts, and managed the flow.
2. Participant: Interacted with the Figma prototype link shared on-screen and employed the Think Aloud Protocol.
3. I documented the interaction, noting verbal feedback, Usability Cues and Emotional Cues with the observation form. The testing location allowed for screen sharing and audio recording, capturing the participant's direct interaction with the prototype.



## Verbal Description of Participant

The current sample consists of a single participant, Dr. Cheri Salazar, who is a primary project stakeholder. Her feedback is deeply informed by research into the target population which is caregivers of children with complex medical needs. She stressed that these caregivers are often "not tech savvy and two, they're stressed" <sup>10</sup>, emphasizing the critical need for the app to be "super simple" and to "actually simplify" their lives rather than add complexity. Her focus was primarily on ensuring the design achieves its core purpose of stability, intuitiveness, and stress reduction.

# Usability Testing

User Observation Form					
Key:	Yes/Occured	No Didn't Occur			
Non-Verbal Behaviors			Observations & Emotions		
Participant	1	Participant	1		
Smiling/Laughing/Happy		Engaged			
Frowning/Grimacing/Unhappy		Intrigued			
Concentration		Excited			
Surprised/Unexpected		Quiet			
Evidence of Impatience		Confused			
		Amused			
		Frustrated			

# Findings: Usability and Navigation Flow

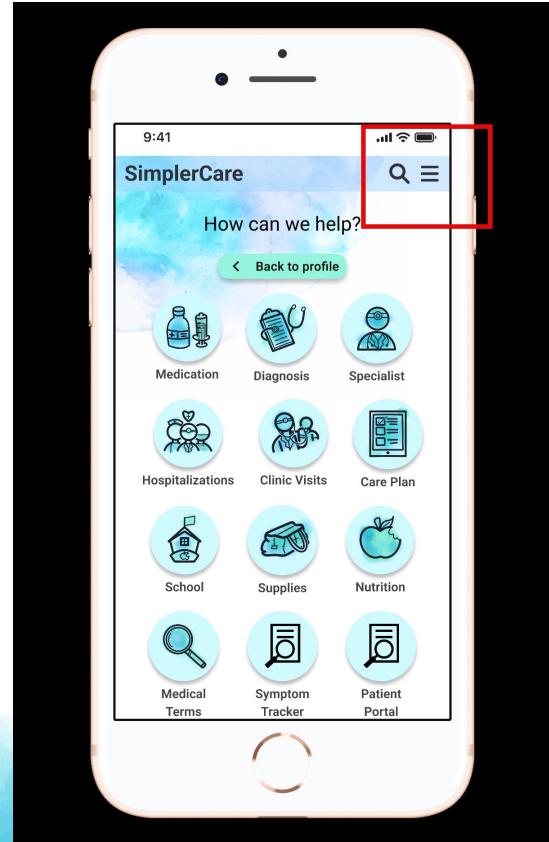
Observation Category	Occurred (Yes/No)	Participant Feedback (Quote)	Recommendation
Clear Path Forward/Next Step	No	"There's no go forward... Like there's no next on this page, so is there a drop down or something that tells them where to go next?"	The design requires a clear, persistent call-to-action or navigational element.
Navigation Friction (Hamburger Dependency)	Yes	"The biggest one was the being making it a little bit easier to flow between without having to go up to the hamburger each time."	Relying on the hamburger/main menu for every return trip causes cognitive load and frustration.
Suggested Navigation Fix	Yes	"Maybe we can do like <b>return to home</b> ... and that'll take them right back to this page."	A dedicated button/tap target is needed for fast return to the main dashboard.
Feature Accessibility/Prototype Status	Yes	"Supplies button doesn't open. And self-care is not opening right now either."	Broken links interrupt the flow and cause frustration, confirming the need to prioritize linking key user flows.
Multi-Patient Complexity	Yes	"When we if we have more than one child... do they have to go completely back to the first page?"	Need a simple, easily accessible <b>toggle</b> within the profile view, not a full re-onboarding process.

# Findings: Usability and Navigation Flow Synthesized

The overall navigational structure of the app is function but the return flow is inefficient, relying on the confusing hamburger menu for every trip navigating back to the main page of the app.

**Details:** The participant immediately identified the lack of clear next steps upon completing or viewing a detailed page like the patient symptom tracker. She correctly identified the problem: needing to constantly exit back to the main navigation menu is cumbersome, especially for a user under stress.

**Insights:** Efficiency is crucial for stressed caregivers. The current system creates more effort. This points to a need for an "Back to Home" or "Dashboard" button on every sub-screen to instantly reduce friction and cognitive load. The multi-patient flow must also be simple and intuitive.



# Findings Content and Emotional Efficacy (Affirmations)

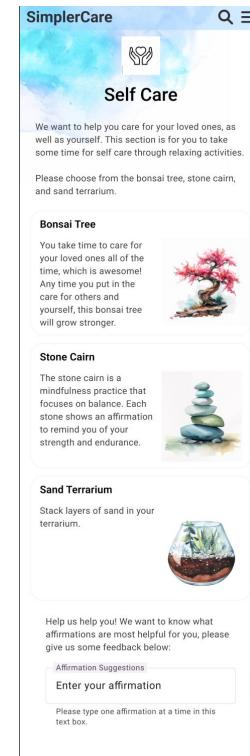
Observation Category	Occurred (Yes/No)	Participant Feedback (Quote)	Implication
Color Scheme/Aesthetic	Yes	"I really like what we chose. That whole watercolor. Like watercolor is very soothing and it has blurred edges and it's just there's nothing stark about it."	The soft, non-stark aesthetic successfully promotes calm and stability, aligning with the emotional goal.
Personal Efficacy of Affirmations	Yes	"I think if we just change it to I's to make it more personally affirmation."	Affirmations must be rewritten in the first person to be effective and resonate with the user's internal dialogue.
Group vs. Statement Language	Yes	"Instead of it saying we believe like who's we, right?"	Language that implies external authority or group belief ("we," "you have all you need") must be removed or rephrased to focus on the user's agency ("I am resilient").
Positive Value (Self-Care)	Yes	"Something for the parent or caregiver that everything else is always about their child."	The self-care feature is highly valued because it acknowledges and addresses the caregiver's needs, not just the patient's.

# Findings Content and Emotional Efficacy (Affirmations) Synthesized

Overview: The visual design (watercolor scheme) successfully achieves its emotional goal of calmness. However, the language of the affirmations needs refinement to shift from external statements to active, first-person internal validation.

Details: The participant's feedback confirms the visual design choice was correct, offering a stark contrast to the "stark" nature of doctors offices and hospitals. The most critical finding in this section is the language mismatch in the affirmations. To truly help stressed parents, the messages should feel like they are coming from within for example: "This is hard," "I am resilient." Instead of something like "we believe in you." Who is "we" in this situation.

Insights: An affirmation's power lies in the user's internal acceptance. The design must minimize external authority and maximize the sense of personal agency. The affirmations must be changed to highlight the caregiver's need for validation and stress relief separate from their role as a patient manager.



VS

Welcome to the MSU Health Care Patient Portal

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We use athenahealth to help you access your health information for different doctors' offices with just one email and password.

Welcome to the New MSU Health Care Patient Portal!

We are pleased you have chosen to use the MyMSUHealth Patient Portal to communicate in a secure and confidential manner with your care team.

If you have registered before in our old portal, use your previous email and password to log in!

Taking just a few minutes to register will give you access to valuable information and services provided in a secure and confidential manner. Once registered and logged in, you will be able to:

- Exchange messages with our practice.
- Please note more involved messaging with your provider may create a billable service. You may be charged.
- Review and pay billing statements.

## Overall Recommendations

Based on user feedback, our design must prioritize efficiency and personal emotional support:

- Prioritize Core Navigation Efficiency.
- Refine Affirmation Language for maximum psychological efficacy.
- Complete Feature Linking to enable comprehensive testing.

## Overall Recommendations - Navigation and Usability

Recommendation	Rationale
Implement Persistent "Back to Home" Button. Add a clear "Home" or "Dashboard" button/anchor on every sub-screen for one-tap return.	Eliminates reliance on the hidden Hamburger menu, reducing user friction and stress.
Add Seamless Multi-Patient Toggling. Integrate a simplified, persistent mechanism on the main profile screen to toggle between multiple patients.	Simplifies management for caregivers of multiple children; avoids tedious re-entry or navigation.
Fix Broken Links (Symptom, Supplies, Self-Care). Ensure all key features are linked and functional for the next testing phase.	Prevents user frustration and allows for full feature assessment in subsequent rounds.

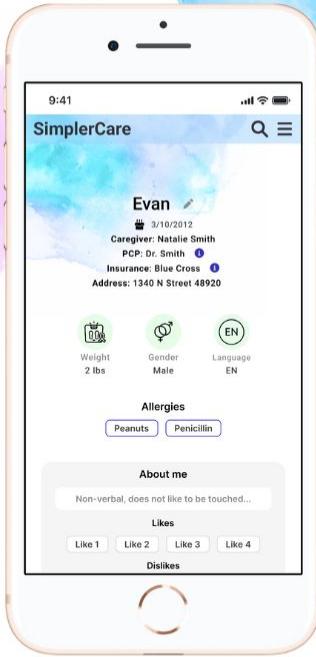
## Overall Recommendations - Content and Visuals

Recommendation	Rationale
Convert Affirmations to First-Person ("I") Language. Rewrite statements from "we" or "you" to "I" statements (e.g., "I have all I need").	Increases personal relevance and psychological efficacy by aligning content with the user's internal dialogue.
Consult Domain Expert (Dr. Sagal) on Content. Finalize the affirmation list and language based on clinical and contextual appropriateness.	Ensures the therapeutic content is validated and suitable for the target population.

**Primary Audience:**  
**Families/Caregivers of**  
**children with Complex**  
**Medical Care Needs**  
**(CMC).**

"These caregivers are often 'not tech savvy and two, they're stressed', emphasizing the critical need for the app to be 'super simple' and to 'actually simplify' their lives rather than add complexity." — Dr. Cheri Salazar, Primary Project Stakeholder

**Core Aims (The Solution)**  
**Reduce Caregiver Burden:** By simplifying the complex medical needs management.  
**Provide Psychological Support:** Integrating ethical gamification (like meditative rock stacking) to reduce stress.  
**Enhance Usability:** Developing a prototype that is accessible and user-friendly for non-tech-savvy users.



# SimplerCare App

Simpler Care is a mobile care app that serves as a coordination tool. The project aims to improve care integration, reduce caregiver burden, and enhance communication between families and healthcare providers for children with complex medical care (CMC).

**Sector:** Mobile Health Application and Care Coordination Tool



**Team:**  
**Transforming Tools**  
**Together Lab**  
**MSU Students (Student PIs):** Yevgenia Minchuk, Daniel Galisteo, Avery McLean  
**Principal Investigator:** Cheri Salazar, DNP

**SimplerCare**  
Empowering Families

## USER “Aha!” Moments

“These caregivers are often 'not tech savvy and two, they're stressed', emphasizing the critical need for the app to be 'super simple' and to 'actually simplify' their lives rather than add complexity.” — Dr. Cheri Salazar, Primary Project Stakeholder

## Design Researcher “Aha!” Moments

I realized that the language of the affirmations needed refinement to maximize psychological efficacy. The self-care feature is highly valued because it acknowledges and addresses the caregiver's needs, not just the patient's  
- Avery McLean

# Our Partners



Transforming Tools Together



MSU  
College of Nursing



College of Communication  
Arts and Sciences  
MICHIGAN STATE UNIVERSITY

MSU  
College of  
Communication Arts  
and Sciences



Department of Pediatrics  
and Human Development  
COLLEGE OF HUMAN MEDICINE  
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Department of  
Pediatrics



Osteopathic Medicine  
Pediatrics



MSU  
Honors College



MSU Health Care

MSU Health Care



University of Michigan Pediatrics



Children's Palliative Care  
Coalition of Michigan

# Our Team

**Principal Investigator:** Cheri Salazar, DNP, CPNP-PC/AC, CHPPN

**Academic Position/Title:** Assistant Professor, Michigan State University College of Nursing, Pediatric Nurse Practitioner, Michigan State Pediatrics

**Co-Pis Faculty:** Susan Bonner, Celeste Campos-Castillo

**Project Site(s):** Michigan State University Pediatrics, University of Michigan Pediatrics

**MSU Students:**

Student PIs: Yevgenia Minchuk, Daniel Galisteo, Avery McLean



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Tools Together

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