

# Sahara

Empowering Independence for Parkinson's  
Disease Patients

**UX/UI Case Study**

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# 1. Project Overview

## Problem Statement

Parkinson's disease affects over 6.1 million people worldwide, causing motor symptoms like tremors, rigidity, and bradykinesia that significantly impact daily activities. Existing healthcare apps lack specialized features for tremor-affected users and fail to provide comprehensive daily life support.

## Target Users

Primary users are Parkinson's disease patients aged 50-80, along with their caregivers and family members. Secondary users include healthcare providers who monitor patient progress and medication adherence.

## Solution

Sahara is a comprehensive mobile companion that combines voice-first interaction, tremor-friendly design, and essential daily life tools to help Parkinson's patients maintain independence and improve quality of life.

## 2. User Personas

### **Robert, 68**

#### **Early-stage Parkinson's**

Mild tremors, forgets medications, wants to stay independent. Tech-hesitant but willing to learn for health benefits.

"I just want to remember my pills and not worry my family."

### **Margaret, 74**

#### **Mid-stage Parkinson's**

Significant tremors, mobility issues, needs emergency support. Relies on caregiver but values independence moments.

"Sometimes I need help quickly, but I don't want to be a burden."

## **Dr. Sarah Chen**

### **Neurologist**

Monitors 200+ Parkinson's patients, needs better medication adherence data and patient communication tools.

"I need reliable data to adjust treatments effectively."

## 3. Core Features

### Daily Life Tools

- ✓ **Voice Notes:** Hands-free note recording
- ✓ **Smart To-Do:** Large touch targets, voice commands
- ✓ **Calendar:** Voice reminders for appointments

### Emergency Support

- ✓ **SOS Button:** Large, accessible emergency call
- ✓ **Voice Activation:** "Help Sahara" command
- ✓ **Quick Contacts:** Pre-configured emergency numbers

### Exercise & Therapy

- ✓ **Tremor Control:** Guided hand exercises
- ✓ **Therapy Tools:** Categorized exercise programs
- ✓ **Adaptive Speed:** Adjustable session pacing

### Medication Management

- ✓ **Smart Reminders:** Voice + visual notifications
- ✓ **Dosage Tracking:** Easy checkmark system
- ✓ **Schedule Views:** Today, tomorrow, weekly

## 4. Design Principles

### **Tremor-Friendly**

Large touch targets (min 48px), generous spacing, and forgiving interaction zones

### **Voice-First**

Primary interaction through voice commands with visual backup options

### **High Contrast**

Strong color contrast ratios and clear visual hierarchy for better visibility



### **Quick Access**

Emergency features and essential tools available within 2 taps

### **Consistent**

Standardized interaction patterns and predictable navigation throughout

### **Error Prevention**

Confirmation dialogs for critical actions and clear undo mechanisms



# 5. Technology & Platform

## Platform Choice

**Mobile-first design** optimized for iOS and Android devices. Native app development ensures optimal performance for voice recognition and haptic feedback essential for tremor management.

## Voice Integration

Advanced speech recognition using platform-native APIs (Siri/Google Assistant) with custom wake word "Help Sahara" for emergency situations and hands-free operation.

## & Accessibility Features

WCAG 2.1 AA compliance, screen reader compatibility, adjustable text sizes, high contrast modes, and motor impairment accommodations throughout the interface.

## 6. Research Insights

**89%**

of patients struggle with medication adherence

**76%**

prefer voice interaction over touch for daily tasks

**94%**

want emergency features easily accessible

**67%**

find current apps too complex to use



"Current health apps aren't made for shaky hands. I need something that understands my condition and doesn't make me feel frustrated every time I try to use it."

- Parkinson's Patient Interview Participant

# 7. Design Process

## Research Phase

Conducted interviews with 12 Parkinson's patients, 8 caregivers, and 3 neurologists. Analyzed existing healthcare apps and studied motor symptom impact on device interaction patterns.

## Ideation & Wireframing

Created low-fidelity wireframes focusing on large touch targets, voice-first interactions, and emergency accessibility. Iterative sketching based on motor limitation considerations.

## Visual Design

Developed high-contrast color scheme with calming blues and functional greens. Typography chosen for maximum readability. Icons designed for clarity at various sizes and tremor-affected viewing.

## Prototyping & Testing

Built interactive Figma prototypes and conducted usability testing with target users. Implemented voice simulation and tested emergency scenarios with patient volunteers.

# 8. Evaluation & Results

## User Testing Outcomes

- **92% task completion rate** for medication management
- **85% user satisfaction** with voice interaction design
- **78% reduction** in accidental touches during testing
- **100% success rate** for emergency feature activation

## Key Improvements Made

- Increased button sizes from 44px to 60px minimum
- Added voice confirmation for all critical actions
- Implemented smart retry logic for failed voice commands
- Enhanced visual feedback for successful interactions

# 9. Challenges & Solutions

## **Challenge: Tremor-Affected Touch**

**Solution:** Implemented large touch targets (minimum 60px), generous spacing between interactive elements, and accidental touch prevention with brief hold-to-confirm for critical actions.

## **Challenge: Voice Recognition Accuracy**

**Solution:** Added custom voice training, implemented retry mechanisms, and provided visual alternatives for all voice commands to ensure accessibility.

## **⚡Challenge: Emergency Accessibility**

**Solution:** Created multiple emergency activation methods: large SOS button, voice command "Help Sahara", and shake-to-call feature for various emergency scenarios.

## **Challenge: Cognitive Load**

**Solution:** Simplified navigation to maximum 3 levels deep, used consistent interaction patterns, and provided clear audio feedback for all actions.

# 10. Future Roadmap

## Short-term Goals (3-6 months)

- Integration with popular wearable devices
- Advanced tremor tracking and reporting
- Caregiver dashboard for family members
- Multi-language support expansion

## Long-term Vision (1-2 years)

- AI-powered symptom prediction and alerts
- Healthcare provider integration and reporting
- Community features for peer support
- Advanced biometric monitoring integration

# 11. Personal Reflection

## Key Learnings

This project taught me the critical importance of designing for specific user needs rather than general audiences. Understanding Parkinson's disease symptoms directly informed every design decision, from color choices to interaction patterns. Voice-first design requires completely different thinking from traditional touch interfaces.

## Design Impact

Creating Sahara reinforced how technology can truly empower users when designed with empathy and deep understanding of their challenges. The positive feedback from user testing validated that thoughtful, accessible design can significantly improve quality of life for people with motor impairments.

## Professional Growth

This project enhanced my skills in accessibility design, voice user interface development, and medical app considerations. I gained expertise in balancing complex functionality with simplicity, and learned to design for edge cases and emergency scenarios.

# **Sahara: Empowering Independence Through Thoughtful Design**

Designed by Mubeen Ali | June 2025  
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