



## **A Study of User Experience and Accessibility in Popular Health Monitoring Applications**

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### **Article Info**

**Article History:***Published: 14 Nov 2025***Publication Issue:***Volume 2, Issue 11  
November-2025***Page Number:***260-265***Corresponding Author:***PATEL ANJALI  
BHARATBHAI****Abstract:***

Health monitoring applications have become essential tools in personal healthcare management, enabling users to track fitness levels, monitor chronic conditions, and communicate with medical professionals. This study investigates user experience (UX) and accessibility features in popular health monitoring applications such as Apple Health, Google Fit, Samsung Health, and MyFitnessPal. The research evaluates how effectively these applications cater to diverse user needs, particularly those of elderly and differently-abled individuals. Through surveys, usability testing, and accessibility audits, the paper highlights best practices, common design flaws, and suggests improvements for inclusive, user-friendly health applications.

**Keywords:** User Experience, Accessibility, Health Monitoring Applications, Mobile Health, Usability, Inclusive Design, Digital Health Equity.

### **1. Introduction**

The digital health revolution has led to a surge in the use of health monitoring applications across platforms. These applications play a vital role in preventive care, fitness tracking, chronic disease management, and improving health literacy. However, ensuring these tools are both usable and accessible remains a significant challenge, especially for older adults, people with disabilities, and users with low digital literacy.

This study aims to analyze the **user experience (UX)** and **accessibility** aspects of leading health monitoring apps and how these factors influence adoption, satisfaction, and overall health outcomes.

### **2. Objectives of the Study**

1. To evaluate the usability of selected health monitoring applications.
2. To assess the accessibility features for users with disabilities.
3. To identify gaps in user experience design and inclusivity.

4. To recommend design improvements for enhancing accessibility and usability.

### 3. Review of Literature

Prior research underscores the importance of **user-centered design** in healthcare apps (Zhou et al., 2019). While many apps score high in functionality, their design often overlooks users with visual, cognitive, or motor impairments (Goyal et al., 2021). Guidelines like the **Web Content Accessibility Guidelines (WCAG 2.1)** and **Mobile Accessibility Guidelines** offer a framework, yet their implementation remains inconsistent.

Studies have also shown that **simple navigation, customizable fonts, audio cues, and voice integration** significantly improve user experience for seniors and visually impaired users (Lazar et al., 2018).

### 4. Research Methodology

#### 4.1 Selection of Applications

Four widely used health apps were selected:

- Apple Health
- Google Fit
- Samsung Health
- MyFitnessPal

#### 4.2 Data Collection Methods

- **User Surveys (n = 100):** Gathered feedback from diverse users, including elderly and differently-abled.
- **Heuristic Evaluation:** Applied Nielsen's usability heuristics.
- **Accessibility Audit:** Based on WCAG 2.1 and mobile accessibility standards.
- **Usability Testing:** Tasks performed by participants with observation of behavior and pain points.

#### 4.3 Participants

Participants included a balanced mix of:

- Age groups (18–30, 31–60, 60+)
- Differently-abled users (visual impairments, hearing difficulties, motor limitations)
- Tech-savvy and novice users

## 5. Findings and Analysis

### 5.1 Usability Insights

- **Apple Health:** High visual design quality but lacks onboarding support for non-iOS users or low-literate individuals.
- **Google Fit:** Simple UI; however, lacks granular customization for specific health goals.
- **Samsung Health:** Rich in features but perceived as cluttered and complex.
- **MyFitnessPal:** Highly functional with food tracking but includes intrusive ads in the free version, affecting user flow.

### 5.2 Accessibility Audit

Application	Screen Reader Support	Voice Commands	Font Customization	Color Contrast	Keyboard Navigation
Apple Health	Yes	Partial	Yes	Adequate	Limited
Google Fit	Yes	No	Limited	Moderate	Minimal
Samsung Health	Partial	No	Yes	Good	No
MyFitnessPal	Yes	No	Partial	Poor	No

### 5.3 User Feedback

- 40% of elderly users reported difficulty in locating features quickly.
- 30% of differently-abled users found the voice assistant features lacking or non-existent.
- Users demanded **dark mode, larger buttons, haptic feedback, and text-to-speech support.**

## 6. Discussion

The analysis reveals that while popular health monitoring applications are feature-rich, they fall short in addressing the diverse needs of all users, especially those who are elderly, differently-abled, or have limited digital literacy. The core issues identified are a lack of personalization, inconsistent accessibility support, and an overemphasis on aesthetics over usability.

### **6.1 Inadequate Universal Design Implementation**

Despite awareness of design standards like WCAG 2.1, many applications only partially comply with them. For example, some apps fail to provide adequate color contrast or scalable text, which hampers readability for users with visual impairments. Others lack keyboard navigation or voice support, making them inaccessible to users with motor disabilities.

### **6.2 Overcomplexity and Feature Overload**

Samsung Health, for instance, includes a wide variety of tools and trackers, but users found it overwhelming. Similarly, MyFitnessPal's interface, cluttered with ads in the free version, creates distractions and hinders seamless interaction. This points to the need for minimalistic yet powerful UI design tailored to different user personas.

### **6.3 Lack of Inclusive Interaction Modes**

Most applications rely heavily on touch and visual interfaces. This limits usability for users who require auditory cues or gesture-based navigation. Voice commands, where available, are often rudimentary or limited in scope. An inclusive design should consider multi-modal interaction to accommodate users with varying abilities.

### **6.4 Affordability and Accessibility Gap**

Many critical accessibility features are locked behind paywalls or premium versions. For instance, advanced data visualization tools or ad-free experiences—both of which enhance cognitive ease—are not available in free versions. This creates an equity gap in digital health.

In essence, there is a need for developers to move beyond a "one-size-fits-all" approach and incorporate adaptive, responsive, and inclusive design into the core development lifecycle.

## **7. Recommendations**

To bridge the gaps identified in user experience and accessibility, the following recommendations are proposed:

## 7.1 Adherence to Accessibility Standards

Health apps should fully comply with Web Content Accessibility Guidelines (WCAG 2.1) and Americans with Disabilities Act (ADA) standards. This includes:

- Proper contrast ratios,
- Alternative text for all images,
- Keyboard navigability,
- Compatibility with screen readers.

## 7.2 Simplified and Contextual Interface Design

Design interfaces with simplicity and clarity. A contextual UI that changes based on user needs (e.g., beginner vs. expert mode) can improve usability. Key features should be presented upfront, while advanced tools can be nested under expandable menus.

## 7.3 Multi-Modal Interaction Capabilities

Incorporate:

- Voice commands for navigation,
- Haptic feedback for users with visual impairments,
- Gesture recognition for limited mobility users,
- Text-to-speech for information-heavy pages.

## 7.4 Customization and Personalization

Let users:

- Adjust font size, button size, and contrast settings,
- Set up personal dashboards,
- Receive reminders in preferred formats (text, audio, notifications).

## 7.5 Inclusive Onboarding and Tutorials

Onboarding should be multi-format—visual guides, audio instructions, and demo videos—to ensure that all users, regardless of literacy level, can learn to use the app effectively.

## 7.6 User-Centric Feedback Mechanisms

Enable users to report bugs, suggest improvements, or flag accessibility issues directly from the app. These feedback systems should be easy to access and use.

## 7.7 Freemium Design with Accessibility in Mind

Basic accessibility features should never be paywalled. Applications must ensure that all users, regardless of their ability to pay, can access features that are essential for inclusive use.

## 8. Conclusion

The findings from this study emphasize that while the adoption of health monitoring applications is increasing rapidly, inclusivity in design and accessibility remains underdeveloped. Modern health apps must address the digital divide by prioritizing usability for all, not just the tech-savvy or able-bodied users.

An effective health monitoring application is not only functional but also equitable, empathetic, and easy to use for every individual, regardless of their age, ability, or background. Developers and stakeholders in digital health must integrate universal design principles and involve users with disabilities in the design and testing phases.

Going forward, collaborative efforts between developers, accessibility experts, healthcare providers, and users themselves can create truly inclusive digital health ecosystems. This will ensure that the benefits of mobile health technologies reach the populations that need them the most—leading to improved health outcomes, greater autonomy, and better quality of life for all.

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