
Empowering Cancer Survivors with a Mobile Health App



In the United States, there are currently 18.1 million cancer survivors, expected to rise to 22.5 million by 2032. Many survivors face long-term physical, cognitive, psychological, and social challenges due to cancer and its treatments, impacting their quality of life and sometimes resulting in disabilities. Despite the prevalence of these effects, not all survivors identify as disabled. Survivorship plans and rehabilitation programmes are often underutilised due to various obstacles. Mobile health (mHealth) apps, accessible via smartphones and other devices, offer potential solutions to make rehabilitation services more accessible.

mHealth apps to address challenges faced by cancer survivors

A high-fidelity prototype was designed for "WeCanManage," a mHealth self-management intervention for cancer survivors. The app provides daily microlearning modules based on extensive literature reviews and interviews with cancer survivors and healthcare professionals. It focuses on four main areas: validating the survivorship experience, teaching goal-directed self-management strategies, emphasising mindfulness-based practices, and promoting self-advocacy and disability rights. The Courses section offers a 4-week educational programme for cancer survivors focusing on dealing with the long-term effects of cancer treatment. It is divided into four modules: WeCanRelate, WeCanAdapt, WeCanBreathe, and WeCanSpeakUp, utilising mobile microlearning modules presented in various formats, including text, clickable cards, and audio. Interactive engagement activities, like reflections and knowledge checks, are integrated into the sessions to reinforce learning. The Community section facilitates peer networking and support by allowing users to connect with others based on cancer type and disability and features discussion forums related to each course module and an open discussion forum. The Library section offers additional evidence-based resources.

Assessing Usability and Effectiveness

To evaluate the usability of mHealth apps, usability testing methods, such as questionnaires, task completion, think-aloud techniques, interviews, and heuristic evaluation, are commonly employed. The System Usability Scale (SUS) is frequently used in these evaluations. These methods have proven effective in assessing various health-related apps, including those for diabetes, depression, and cancer symptom management. The WeCanManage prototype underwent a comprehensive evaluation for usability, using heuristic evaluation and usability testing, to ensure it effectively addresses the unique needs and challenges of cancer survivors with disabilities. Twenty-two undergraduate students from a human-computer interaction course in a Midwestern university conducted the evaluation. They were split into groups and given specific tasks to complete using the prototype. Maze, an online testing platform, was used to monitor and record their interactions and gather feedback. Students documented violations of the heuristic principles and rated their severity on a scale from 0 to 4. Additionally, they provided feedback on the prototype's design, course modules, and content format through a questionnaire.

Usability Issues: Insights from Heuristic Evaluation and Testing

The heuristic evaluation revealed that the highest severity rating was 3, with common violations related to flexibility, user control, and error prevention. Issues such as navigation problems, missing back buttons, and small font sizes were identified, and recommendations for improvement included adding an FAQ page, contact information, and a walk-through guide. During usability testing with cancer survivors, participants expressed overall satisfaction with the prototype, as reflected in an average System Usability Scale (SUS) score of 81, which is considered excellent. High satisfaction levels were observed, although lower scores were noted for specific tasks related to navigation and accessibility. About 21% of tasks required assistance, indicating areas that needed improvement. Participants praised the content, features, and design of the app but raised concerns about accessibility, navigation, and the lack of a help guide.

Empowering Cancer Survivors: Insights from Usability Testing

Based on the feedback received, several improvements were made to the prototype. A help guide was introduced and integrated into the first course session, and the accessibility format switching methods were revised. Font sizes were increased, and more back buttons were added to improve navigation. Other design changes were implemented to enhance usability and accessibility, including enlarging icons, improving the layout, and adding a return option for the help guide. In discussions about the WeCanManage app, the aim was highlighted as supporting cancer

survivors with disabilities in managing the long-term effects of cancer treatment. The heuristic evaluation and usability testing provided valuable insights that led to improvements in enhancing the user experience. The feedback emphasised the importance of accessibility, particularly regarding font sizes, icons, and navigation. Participants valued the community features of the app, which provided support and reduced feelings of isolation.

Challenges were encountered in recruitment for usability testing, affecting the number of participants. However, the findings remained valid and useful. The prototype was well-received overall, and there are plans for further feasibility testing to refine the app and ensure it meets the needs of its target users.

Source: [JMIR Human Factors](#)

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