



## Usability of Commercially Available Mobile Applications for Diverse Patients

### Synopsis

Mobile applications, or apps, have the potential to help patients with diabetes and other chronic conditions manage their health better. But as currently designed, health apps can present challenges to the vulnerable populations who would likely benefit the most, including the poor and patients with low levels of health literacy. An observational study of adults using apps to manage their chronic conditions found that patients could complete only a minority of tasks without any assistance.

### The Issue

The effective management of chronic conditions such as diabetes and depression often requires close monitoring of symptoms and making changes to diet, exercise, and medication. These tasks that can be made easier by mobile apps that provide patients with reminders and education about caring for their conditions. Apps also can help patients and providers track health data over time, helping to reveal how changes in behavior and medication influence outcomes. To find out whether these apps are appealing and accessible to low-income patients—who suffer disproportionately high rates of chronic disease and may be less engaged with their own care—Commonwealth Fund-supported researchers observed patients using several commercially available apps for diabetes and depression. The researchers also studied the usability of apps for elderly patients' caregivers, who are often geographically dispersed and need to share medical information.

### Key Findings

- All the apps required significant manual data entry and progression through multiple screens and steps, making it difficult for patients and caregivers to complete basic, yet critical, tasks. In all, participants were able to complete only half of the data entry tasks—such as entering a blood glucose level—without assistance. Many were hampered by unclear explanations of what needed to be entered.
- Patients struggled even more with retrieving data, such as information about upcoming appointments that had been entered into caregiving apps. Participants completed only 79 out of 185 tasks (43%), across 11 apps, without assistance.
- None of the apps had simple interfaces with large buttons and easy-to-follow instructions and navigation. In general, the apps lacked explanations of the relevance of various functions—for instance, why a diabetic patient might wish to look back at a prior meal.
- Three themes emerged from participants' comments: lack of confidence with technology, frustration with design features and navigation, and interest in having technology support their self-management.

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## The Big Picture

To harness the potential of mobile apps, developers may need to engage a diverse set of patients in the design and testing of their products. In addition, the apps should be able to remind users of the rationale for each task and should integrate data from other sources, such as pharmacies, to reduce the need for manual data entry. Research on the impact of such apps on uptake, use, self-management behaviors, and health outcomes also is needed.

If we cannot harness the potential of mobile technology to improve self-management and, ultimately, health, it will be a missed opportunity in efforts to ameliorate health disparities.

## About the Study

The authors selected 11 popular and well-rated mobile apps from among the hundreds available to manage diabetes, depression, and caregiving and observed 26 patients using them. Nearly 60 percent of the participants were African American. The remainder were white (27%), Asian (8%), and Latino (8%). Nearly 70 percent were deemed to have limited health literacy. Each was given condition-specific data entry and data-retrieval tasks, such as entering blood glucose values into a diabetes app or recording medication instructions.

## The Bottom Line

To reduce health disparities, app developers must ensure their products are tailored to the needs of the populations that are likely to benefit the most from their use.

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