

Mobile app review for epilepsy self-management

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Abstract

Mobile health app developers are increasingly interested in supporting the daily self-care of people with chronic conditions. The purpose of this study was to review of mobile applications (apps) to promote epilepsy self-management. It investigates: 1) the available mobile apps for epilepsy, 2) how these apps support patient education and self-management (SM) and 3) what is their utility for supporting chronic disease management.

We conducted the review in Spring 2017 and assessed apps available on the Apple App Store that related to the terms "epilepsy" and "seizure". Inclusion criteria included apps (adult and pediatric) that were: 1) developed for patients or the community; 2) made available in English, and 3) less than \$5.00 for affordability. Exclusion criteria included apps that were designed for dissemination of publications, focused on healthcare providers or were available in other languages. The search resulted in 149 apps, of which 26 met the selection criteria. A team reviewed each app in terms of three sets of criteria: 1) epilepsy-specific descriptions and SM categories employed by the apps and 2) Mobile Health Rating Scale (MARS) sub-domain scores for reviewing engagement, functionality, aesthetics, and information; and 3) Michie et al. Taxonomy of behavioral change strategies.

The mobile apps achieved high MARS ratings for functionality and aesthetics while they scored low on user engagement and information provision. Most apps addressed only a subset of SM categories relating to treatment, seizure tracking, response, and safety aspects of self-management while none of the apps provided a comprehensive coverage of all categories in this review. The app coverage of SM categories ranged from 0-10 ($M=3.95$, $SD=2.66$). In addition, while apps employed a range of behavior strategies such as communicating health consequences and prompting for self-monitoring, none of the apps provided evidence of the effectiveness in meeting its goal or employed strategies to promote long-term engagement. Behavioral changes strategies ranged from 1 to 9 ($M=3.74$, $SD=2.10$). These results suggest the need for a broader coverage of SM domains and behavioral change techniques and evaluated outcomes. In addition, we observed a scarcity of epilepsy self-management tools for supporting pediatric transition to adult self-care. Introducing mobile apps that facilitate greater collaboration and engagement among patients, caregivers and clinicians could help to address this challenge while benefiting patients of all ages.

Significance to WISH

Epilepsy self-management is essential for patient seizure control and effective treatment yet patients, caregivers, and clinicians often struggle with one or more aspects of these practices: facilitating medication adherence, self-reporting, and self-regulating behaviors. Mobile apps stand to address aspects of these challenges; however, there is currently a scarcity of information regarding how these apps apply to daily epilepsy self-management practices.

In this review, we investigated epilepsy self-management apps and found that while the functionality and aesthetics of these apps were rated higher than other domains, stated self-management goals and features varied greatly and there is a considerable need for introducing more robust behavioral strategies and theory behind their design. The review presents methodologies for reviewing apps for health and patient self-management through the Mobile App Rating skills and Michie et al. Taxonomy of behavioral change strategies.

The resulting findings stand to benefit the WISH community by highlighting current capabilities of mobile apps for epilepsy self-managing and discussing specific underexplored design opportunities for supporting daily medication adherence and stress management. In addition, we discuss the broader implications of this work to pediatric transition to adult self-care and recommend strategies for increasing collaboration and engagement between pediatric patients, caregivers, and clinicians.

Publication Statement

This work was presented to the Children's Healthcare of Atlanta (CHOA) and does not conflict the policies of the venue where the work was originally published or presented.