

Life and Death in a Prescription Bottle: Design of Mobile Health Education to Transform Self-care in Cancer Medication Regimens



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POWERFUL medications used to treat cancer are increasingly available in oral formulations (i.e., tablets and capsules). Shifting cancer care away from infused therapies in physician offices and hospitals into residential settings with oral therapies offers convenience, but increases patient responsibility for managing complex therapy and monitoring adverse effects. Medication adherence is the extent to which patient behavior corresponds with the prescribed regimen. Adherence to oral anticancer medications (OAMs) can lead to improved outcomes, while non-adherence (typically up to 40%) can result in accelerated disease progression or death. Novel communication methods are needed as patients are distanced from their healthcare providers when taking OAM regimens that are often complex, often adjusted, and may produce strong to unbearable side effects. Adequate opportunity is needed for patients to receive and process information, reflect upon therapy, and actively engage in transformative processes following diagnosis of cancer. We will describe development and feasibility testing of a customized mobile health education technology platform designed to facilitate better patient-provider communication, greater adherence, and improved outcomes for patients with cancer.

Methods: With input from patient advocates, an interdisciplinary team developed a tablet-based application (app) called Mobilizing for Patient Adherence to Cancer Therapies (mPACT) that targets 12 oral anticancer medications with education and text messaging. The program focuses on 3 to 4 common barriers to medication use [dosage change, timely refills, side effects, complex schedule for on-off medication schedule (as applicable)]. Nineteen interviews were conducted with research participants in the outpatient oncology pharmacy and oncology clinic at the study setting, which is located in an urban academic health center. In addition to animations on common barriers, each participant was shown app content for two different OAMs, one with a continuous medication cycle and a second with an on-off medication cycle. Qualitative data were collected in August 2016 and analyzed on app feasibility and preferences of participants.

Results: Eleven participants were men and 8 were women. The racial and ethnic breakdown was Asian-American 1, African-American 8, Hispanic 3, and Caucasian 7. Responses ranged from a simple nod of the head throughout the entire patient education program, to laughter, and agreement and explanation of how they have lived through the side effects or barriers to adherence. Participants differed in desired frequency for text messages. Two participants mentioned only having a landline and were unable to receive text messages. The usability of the program was demonstrated when users tapped through the program. The responses from the patients went from excitement and wanting to know when this would be deployed to one tech-savvy participant who said this needs to be more advanced. Concern from multiple participants was their perception older patients would not want to interact with the application due to a technology generational divide. One participant described the desire for comfort from the doctor and pharmacists when hearing the information instead of the information from a tablet. Patients discussed how the patient stories were relatable about challenges to medication adherence.

Discussion: Bringing the tablet to a patient's home via nurse or home aide is another method to reinforce the OAM education on the complex medication schedule, the information and technology would be similar. All participants were able to navigate the program and were able to discuss the content. Transforming OAM medication instructions to patient stories and animations delivered on a tablet was received well by participants in this new method.

Conclusion: Feedback from the multiple interviews will be used to improve the mPACT program before the future randomized control trial to measure medication adherence and satisfaction with patient care. The challenge with developing tablet applications is to meet the needs of the novice user as well as the digital natives. Delivering tailored health information to a patient's mobile phone (enabling in-home provider communication) to increase OAM medication adherence is a novel challenge, and meeting the challenge requires a multifaceted approach.

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