

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: <http://www.elsevier.com/journals/international-journal-of-nursing-sciences/2352-0132>

Commentary

Nursing and mHealth



Catherine Samples, Zhao Ni, Ryan J. Shaw*

School of Nursing, Duke University, Durham, NC 27710, USA

ARTICLE INFO

Article history:

Received 25 June 2014

Received in revised form

18 August 2014

Accepted 21 August 2014

Available online 10 September 2014

Keywords:

Mobile health

mHealth

Nursing

ABSTRACT

Innovations in mobile health (mHealth) technology offer applications to promote wellness management and health behavior change outside of formal clinical settings. Nurses can help to move mHealth into mainstream health care by understanding its potential to change the landscape of health intervention delivery, incorporating mHealth into patients' day to day preventive care strategies, and supporting the science of mHealth's effectiveness.

Copyright © 2014, Chinese Nursing Association. Production and hosting by Elsevier (Singapore) Pte Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Two trends are converging to produce a paradigm shift in US health care. First, traditional hospital-centered care focused on diagnosis and treatment is yielding to a system of individual- and community-centered care focused on preventive health measures, lifestyle management for chronic disease management or prevention, and mitigation of health risks. Second, innovations in mobile health (mHealth) technology offer applications to promote wellness management and health behavior change outside of formal clinical settings [1]. However, the means to integrate data across these formal and informal settings into effective interventions and feedback functions – while critically important – is currently under-developed.

mHealth is the use of personal wireless communication devices, including mobile phones and smartphones, smart-watches, wireless sensors worn or carried by an individual, tablet computers, and point-of-care devices, to support continuous health monitoring, feedback, and behavior

modification of individuals and populations [1–7]. Such devices are in wide use. Among US adults, 90% own a cellphone, and nearly 60% own a smartphone [8]. Among the vulnerable population of socioeconomically disadvantaged adults, 84% percent own a cell phone, almost 50% own a smartphone, and racial/ethnic minority adults are more likely to own mobile devices and use features such as SMS/text messaging or smartphone applications than low-income Whites [8].

Self-monitoring of health-related behaviors and receipt of feedback on these behaviors via mHealth technologies support individual-centered care [9,10]. mHealth wearable fitness sensors and devices, such as Fitbit and Jawbone, allow consumers to track their sleep habits, steps taken, calories burned, and nutrition [11,12]. Non-invasive and comfortable, these devices allow consumers to monitor daily activities easily and leverage social networking support by linking with common social media platforms like Facebook and Twitter. Nurses can help to move mHealth into mainstream health care by understanding its potential to change the landscape of health intervention delivery, incorporating mHealth into

* Corresponding author.

E-mail address: ryan.shaw@duke.edu (R.J. Shaw).

Peer review under responsibility of Chinese Nursing Association.
<http://dx.doi.org/10.1016/j.ijnss.2014.08.002>

2352-0132/Copyright © 2014, Chinese Nursing Association. Production and hosting by Elsevier (Singapore) Pte Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

patients' day to day preventive care strategies, and supporting the science of mHealth's effectiveness [1].

2. Empowering patients in preventive care nursing

Nurses have an opportunity to empower patients to manage their own care proactively by increasing awareness and usability of mHealth technologies in preventive care. This opportunity is particularly critical in primary care settings, where the emphasis on patient self-management of chronic disease, lifestyle adjustment, and health promotion is fundamental to improving health outcomes and reducing health costs. Using mHealth tools to empower patients may be a critical next step in improving overall health at a time when two-thirds of the world's population dies from chronic illnesses including cardiovascular and respiratory disease, cancer, and diabetes [13]. However, in order to teach patients the skills necessary to empower them in lifestyle management through use of mHealth tools, nurses first must understand both the potential and limitations of mHealth technologies for helping patients to manage a healthy lifestyle.

Patient engagement in self-care improves medical outcomes [13], and mHealth innovations hold particular promise for two chronic health conditions prevalent in the US: obesity and hyperglycemia. For patients with obesity, the nurse could provide education on the selection and use of a wearable fitness-tracking device, help patients connect the device to a diet application and a wireless scale, and then send the patient home with clear instructions for use. The patient could then generate data on the device, application, and scale and transmit data to the nurse via patient portals that are monitored on a day-to-day basis, avoiding the need to meet in person for frequent clinic appointments. Using an algorithm that synchronizes these data to the patient's electronic health record, the primary care nurse could view a daily, synthesized snapshot of the patient's progress to provide feedback or intervene as indicated. For a newly diagnosed diabetic patient able to receive instruction on a wireless blood glucometer and food application, the nurse could monitor progress remotely using a computer program that analyzes the daily trends of the patient's blood glucose and diet and alerts the nurse for specific thresholds when triggered. Through the use of such health-related information technology (IT), mHealth strategies communicate information to and from the electronic health record for care coordination processes, engage patients in their care, and improve health outcomes.

3. Challenges of using mHealth in nursing

mHealth methods that take the patient-generated data and convert it into useful knowledge are not without challenges. Accuracy and quality of the data from mobile devices can be compromised by barriers to integration. For example, when using a wristband, a user can simply move the arm back and forth to mimic steps so that the data generated suggests 15,000 steps were taken when, in truth, the user sat still and

manipulated the device. In assuming objective feedback from these devices, the nurse faces the same pitfalls as exist with any non-observed data collected in a community setting rather than observed in a clinical setting. Manipulating mHealth data with these devices can be compared to a non-compliant patient who fails to take medication as prescribed. Nurses in primary care routinely incorporate education on behavioral changes for lifestyle management into their practice and support patients to find the right motivation for taking responsibility for their own health. However, education and support only go as far as our patients allow them to impact their decisions. A second challenge is related to the authority of the US Food and Drug Administration (FDA) over the safety of some mHealth devices. There are different regulations that are imposed on providers if the device is "medical" versus a self-monitoring or tracking tool. A recently released a white paper on their regulation distinguished between "mobile medical applications" that act as medical devices or accessories to medical devices, which are subject to FDA regulation, as opposed to "mobile applications" that allow consumers to log life events, retrieve medical content, or communicate with a health provider, which are not currently FDA regulated [14]. This is important for nurses to understand because it impacts the types of mHealth tools that can be recommended for care and the type of data we can expect to receive from patients and their families.

Effective self-management by patients requires (1) real-time feedback on their health status and behaviors and (2) ongoing empowerment of patients by their clinician providers as they monitor and perform self-care. However, accurate, timely information for these activities are notably absent from current healthcare decision making systems [15]. Access to real time data enables patients and their providers to understand illness dynamics, develop adaptive approaches to improve health outcomes, and deliver personalized care when and where it is most needed. Nurses will be critical in delivering this personalized care, and the use of mobile technologies will be important tools to collect real-time data from patients.

4. Moving the science of mHealth forward

While there is great promise that mHealth can improve health and enhance care delivery, the technology is still relatively new and there is a lack of a systematic scientific base [16]. We are limited in our understanding of how to truly integrate these emerging technologies and their data into healthcare and use them for clinical utility and real-time care. We do not yet know how long patients will sustain tracking multiple types of health related data and the quality of that data over time. Moreover, we need to understand what strategies will facilitate a patient to adapt to multiple types of self-generated data and how a provider can help guide a patient to better self-manage in real-time when guidance is needed most.

Scientists across disciplines are working to move the science of mHealth forward and nurses are at the forefront. Nurses have developed and are developing a variety of mHealth tools ranging from mobile apps to help manage post-traumatic stress disorder [17] to use evidence-based test

Download English Version:

<https://daneshyari.com/en/article/2655762>

Download Persian Version:

<https://daneshyari.com/article/2655762>

[Daneshyari.com](https://daneshyari.com)