Viewpoint

The role of mHealth in mental health

Anna Sort

Play Benefit, Barcelona, Spain

Correspondence to: Anna Sort. CEO, Play Benefit, Barcelona, Spain. Email: annasort@playbenefit.com.

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Mental health disorders are common. In United States alone tens of millions of people are affected each year. Overall, only about half of those affected receive treatment. The best estimate of the number of adults with any diagnosable mental disorder within the past year is nearly 1 in 5, or roughly 43 million Americans (1). Neuropsychiatric disorders are the third leading cause of global disability-adjusted life years, following cardiovascular and circulatory diseases, diarrhea, lower respiratory infections, meningitis, and other common infectious diseases (2).

Although mental illnesses are serious disorders with effective treatments, far too few people receive optimal care. Families of people with serious mental illness live with a patchwork of care and support services. They often live in fear for their loved one's safety and well-being. Thanks to the internet, information about mental disorders is now readily available—often, quite literally, in the palm of our hands—nearly two-thirds of Americans now have smartphones (3). In 2012, research found that 87% of the adults in the U.S. had access to the internet; 77% of them used the internet to look for symptoms and health information in general. About half of these searches are done on behalf of someone else (4).

Mobile technologies offer a wide range of possibilities to healthcare professionals just by virtue of being next to the owner 22 hours a day (5). As a nurse, I'm very interested in the use of these technologies for prevention and education in health. There is a huge and growing market of apps to help with lifestyle, wellness and fitness, and health. In fact, health apps are one of the three top mobile trends for 2016 (6). Many, if not most, of these apps store and trend various types of health data, such as the number of steps walked per day or information about sleep patterns.

Because 50% of all mental disorders begin before age 14 and up to 75% of them before age 25, we have to find ways to interact with our youth in order to prevent mental disorders. The average age to get a smartphone is now 10.3 (7,8) and in Spain, 15% of smartphones belong to age group of 12 to 15 years old.

Give the ubiquity of mobile phones and increasing availability of mental health-related apps, I believe some these technologies may be able to play an important role in mental health, particularly in prevention. Some of the apps that I think show promise include Calm (a mindfulness app), Happify (an app to help people be happier), Headspace (a meditation app) and Sleepio (an app to help with sleeping routines).

Two studies related to mind-set apps are worth discussing here. Both were published by a young researcher, Dr. Crum, deputy professor of management and postdoctoral scholar at Columbia Business School. The first (9) explores the role mind-set plays when it comes to exercise. The researchers reached out to maids from different hotels and separated them in two groups. Both groups had BMI measurements taken and were asked to record the quantity of exercise they did daily in a scale of 1 to 10.

The majority of the maids didn't believe they were active; one-third of them reported that they didn't do any exercise at all. Both groups were advised about the importance of exercise. One group was made them aware of the quantity of exercise they were already doing everyday by making beds, vacuuming and scrubbing; the other group was not.

After 2 months the researchers saw the maids again and took measurements and questionnaires. The group that was only told how important exercise was, for the most part, exactly the same as they were 2 months prior. However, most of the group that was told they were already doing a lot of exercise had lost weight, and were now making healthier choices on the side.

In another study Dr. Crum and her team wanted to test the placebo effect on physiologic function. They designed a study that measured blood ghrelin levels before and after consumption of different types of shakes. In the first part of the study, the students drank what was described to them as a "high protein, low fat, low carbs, no sugar added" guilt-free type of shake. They then returned on another day to drink a "full fat, extra sugary" indulgence type of shake. In actual fact, both shakes were exactly the same, but the hormonal reaction was completely different. The researchers found as much as double the amount of ghrelin in the students' blood after drinking the "indulgence" shakes compared to the "healthy" shakes (10).

As an engagement designer, I find these results quite intriguing as one of the strategies I use when doing engagement design is gamification for behaviour change: I use the game-mindset to tackle real life problems. One of the most common uses of the game-mindset when designing engagement is "stress vs challenge".

Jane McGonigal, a video-game designer and researcher, noticed that gamers were good at solving problems in "high-stress" situations, being both more resourceful and also counting on others to help them. She started to research how she could make people feel that way with real life problems, not just in gaming. Her work lead to a series of very interesting results which she describes in her book SuperBetter, in which she also explains the results of the SuperBetter app (11), an app she designed to help people cope and recover from depression.

It all started when she got depression due to a concussion, and as she was a game designer, she started to create a game around her depression, that would give her physical, mental and resilience points. She created an inventory of tasks (she called "quests") to tackle each day that varied in difficulty (calling her sister, hugging her dog, going for a walk, and so forth). She could pick easy quests when she didn't feel like leaving bed, thus, allowing her to feel like she had accomplished something even during her lowest days. In addition to quests, she also had allies—people she could count on to help her at certain points in the game to advance. She additionally had power-ups, things that made her feel good and confident to keep on track, such as a bite of dark chocolate or a walk around the block. Finally, she also had enemies that she had to battle. Being aware of all of those resources, made it easier for her to advance in her depression and finally get out of it. As she thought it might help other people in her situation, she created the an app she called SuperBetter. Today SuperBetter has helped with to motivate people with depression, anxiety, weight-loss, marathon training and more.

SuperBetter has been validated in two clinical studies. "Randomized Controlled Trial of SuperBetter, a Smartphone-Based/Internet-Based Self-Help Tool to Reduce Depressive Symptoms", by the University of Pennsylvania, showed that participants, after playing SuperBetter for 10 minutes daily during 30 days, achieved greater reductions in symptoms of depression in comparison to the control group. The study concludes that "*smartphone-based/Internet-based self-help may play an important role in treating depression.*" (12).

The second study, "Clinical Trial of a Novel Rehabilitation Game (Phase I - Feasibility)", was conducted by Lise Worthen-Chaudhari at Ohio State University Wexner Medical Center and Cincinnati Children's Hospital, and funded by the National Institutes of Health with patients between 15 and 25 years old diagnosed with at least one traumatic brain injury (mild or moderate) within the year before (13). As Jane McGonigal points out in her book "SuperBetter" (14), Worthen-Chaudhari concluded that SuperBetter (the game) worked effectively both as "*a tool that would engage patients over a long rehabilitation period and create a strong support system*".

Smartphones and other mobile devices have the potential to substantially change the way we diagnose and prevent mental health problems, as well as the potential to contribute positively in early stage treatment. They can provide education and employ gaming to motivate people to improve. In order to advance the field, however, health care professionals should incorporate them into their prevention and treatment plans and help that their patients learn how to use them. Therefore it is fundamental that healthcare professionals are trained on how to use the digital solutions and get the habit of choosing and testing the apps they find useful. In a market as big as mobile health apps, you can try selecting apps to test for future patient recommendation based on these three criteria: the content brings science-based information; the app was developed by a team of accredited healthcare professionals; the whole project takes in account the user's needs in the first place.

As technology moves faster than science, the majority of apps "remain unstudied" (15). I believe it is essential that on one hand we have more healthcare professionals trained and working in app developing teams, as well as having more scientists and health professionals test these prevention apps to recommend them to their clients.

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Footnote

Conflicts of Interest: The author has no conflicts of interest to declare.

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