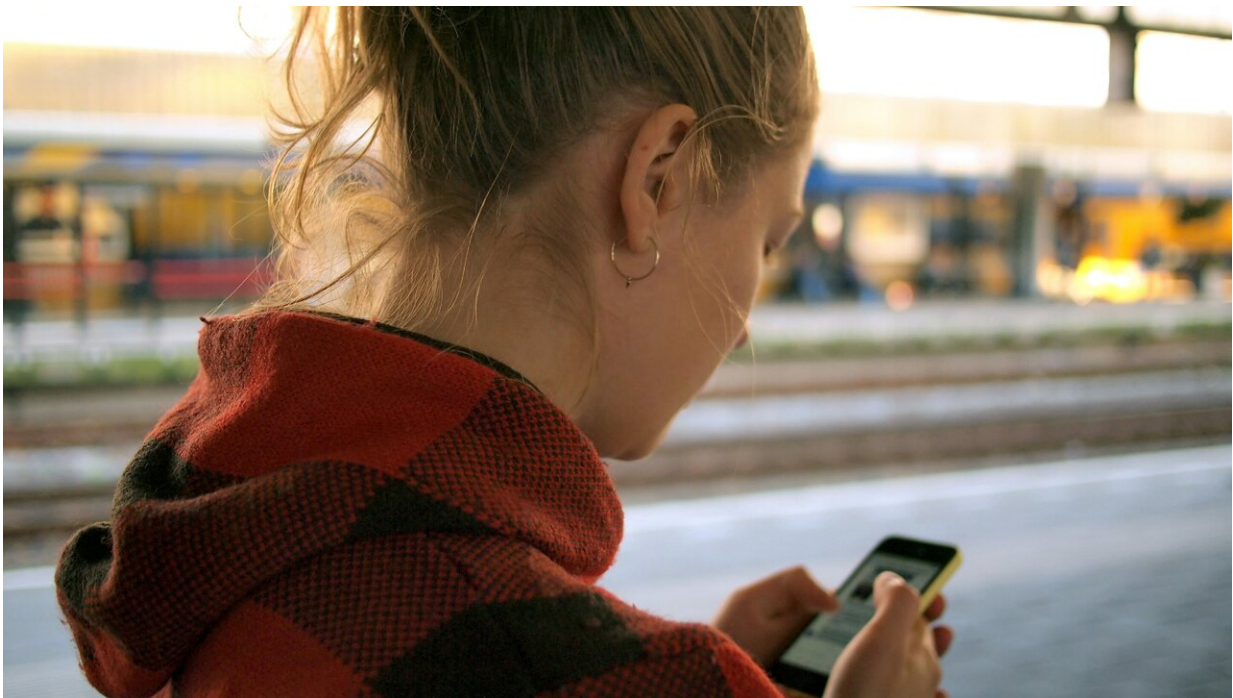


Researchers say future is bright for treating substance abuse through mobile health technologies

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Despite the high prevalence of substance abuse and its often devastating outcomes, especially among disadvantaged populations, few Americans receive treatment for substance use disorders. However, the rise of mobile health technologies can make treatments more accessible.

Researchers at the University of Oklahoma are creating and studying health interventions delivered via smartphones to make effective, evidence-based treatments available to those who cannot or don't want to enter traditional in-person treatment.

Michael Businelle, Ph.D., co-director of the TSET Health Promotion Center, a program of OU Health Stephenson Cancer Center, recently published a [paper](#) in the *Annual Review of Clinical Psychology* that details the current landscape of mobile health technology for substance use disorders and suggests a roadmap for the future.

Within the Health Promotion Research Center (HPRC), Businelle leads the mHealth Shared Resource, which launched the Insight mHealth Platform in 2015 to create and test technology-based interventions.

A multitude of health apps are available commercially, but few have undergone the research necessary to determine if they are effective. Businelle sees the promise of rigorously tested smartphone apps to fill gaps in [substance abuse treatment](#).

"According to the Substance Abuse and Mental Health Services Administration, only 6% of people with [substance use disorders](#) receive any form of treatment," Businelle said. "There are many reasons—we have a shortage of care providers, people may not have reliable transportation, may not be able to get away from work, or they may not be able to afford treatment.

"However, 90% of all U.S. adults own smartphones, and technology now allows us to create highly tailored interventions delivered at the time that people need them."

Businelle and his team have many mobile health studies underway for substance abuse, and the Insight mHealth Platform is used by other

research institutions across the United States. The mobile health field is large and growing, not only for substance abuse but for mental health disorders like depression and anxiety. In his publication, Businelle makes several recommendations for research going forward.

Re-randomize clinical trial participants

Thus far, most [clinical trials](#) for mobile health interventions have mirrored traditional clinical trials studying new drugs, in which participants are randomly assigned to receive a new drug or a placebo and stay in those groups for the duration of the trial. But that approach doesn't work well for substance abuse trials, Businelle said.

For example, if people don't quit smoking on their targeted quit date, they are unlikely to quit during the trial. Unlike traditional trials, mobile health apps can be programmed to re-randomize participants, or move them to a different intervention that might work better for them, he said.

"Instead of being stuck receiving a treatment that we know isn't likely to be effective for an individual, the app can easily re-randomize participants to different treatments," he said. "Just because they weren't successful with one type of intervention doesn't mean that another one won't work."

Objectively verify self-reports

Most substance abuse interventions have historically relied on people to report their own relapses. Unfortunately, because of stigma, people don't always report their usage truthfully, Businelle said. However, technology can now be used to biochemically verify self-reported substance use.

In six of his smoking cessation trials, Businelle verifies whether

participants have smoked by asking them to blow into a small device connected to a smartphone that detects the presence of carbon monoxide. Facial recognition software confirms the participant is the one testing.

"It is really important for the accuracy of our studies to objectively verify what people report," he said. "We are also developing similar noninvasive technologies that can detect the use of other types of substances without collecting urine or blood samples."

What is a successful outcome?

In mobile health substance abuse trials, success is often measured by whether a person is still using a substance at the end of the trial. But reality isn't usually so straightforward. Businelle said people may stop and start using a substance several times during a six-month trial.

Instead of emphasizing the end result, he recommends using technology to assess the effectiveness of an intervention at daily, weekly and monthly intervals. By understanding the number of days of abstinence or number of days until a relapse, for example, the intervention can be more accurately assessed and improved.

Mobile health technology has disadvantages, such as the potential lack of a therapeutic relationship that can develop between patient and therapist, and because some people may need more intensive treatments than mobile health can provide. However, mobile health is still in its infancy.

"Mobile health interventions may reduce stigma because people do not have to attend treatment in person," Businelle said. "Because there is a severe shortage of qualified therapists, always-available behavior change apps could become a first line of treatment for substance abuse, with traditional counseling being reserved for those who do not respond to

mobile [health interventions](#)."

More information: Michael S. Businelle et al, Mobile Health Interventions for Substance Use Disorders, *Annual Review of Clinical Psychology* (2024). [DOI: 10.1146/annurev-clinpsy-080822-042337](https://doi.org/10.1146/annurev-clinpsy-080822-042337)

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