Study underscores benefit of smartphone use to track children's health

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A new, wide-ranging review of available research shows parents and caregivers can improve health outcomes for kids by using mobile-phone apps and text messaging.

The research appears in the prestigious, peer-reviewed journal *JAMA*

Pediatrics on March 20. Previous to this investigation, the only across-the-board review of mobile health (mHealth) effectiveness centered on childhood obesity alone.

"The take-home message is that a smartphone can help a child be healthier across a number of health care behaviors, like making sure they get vaccines or eat a healthy diet," said Christopher Cushing, assistant professor of clinical child psychology at the University of Kansas, who co-authored the findings. "We have some idea that a smartphone and messaging can be a good way to go, but we also have a long way to go to optimize this kind of intervention."

The researchers analyzed 37 unique studies of mobile health interventions, looking for statistical evidence of changes in health behavior or disease control in participants 18 years old or younger.

"Mobile health interventions appear to be a viable health behavior change intervention modality for youth," the study concludes. "Given the ubiquity of mobile phones, mobile health interventions offer promise in improving public health."

Cushing's collaborators include lead author David Fedele as well as Alyssa Fritz and Adrian Ortega of the University of Florida, and Christina Amaro of KU's Clinical Child Psychology Program.

According to lead author Fedele, the study suggests that health care providers should encourage mobile-phone-based tech for their patients.

"Findings from the current study indicate that mHealth interventions are a promising and potentially effective route for pediatric health care providers to use with patients and their family members," he said.

Benefits could come with simple or more complex smartphone

interventions, the researchers found. Their study looked at the benefits of all types of mHealth technology but didn't find advantages of one kind over another.

"It's worth using, and there a lot of different media that can be used," Cushing said. "mHealth interventions can be as simple as text messages and as complicated as a dedicated app. You can go small and send text messages for vaccine reminders or build an app that allows for diet and physical activity tracking."

For parents, Cushing said a key finding suggests they "be involved in the technology."

"If they have a young child, they could opt into a scheduling program that would allow them to see those things that are due for the child like a vaccination," he said. "For an older child, it's appropriate for the child to take on some autonomy such as engaging with an app where they can set goals and get feedback. But the parent should be engaged in that system so they can use teachable moments. If a child isn't sure about why they're not meeting goals, a parent can use adult problem-solving to help find an answer."

According to Cushing, the findings should be relevant to parents, caregivers and pediatricians but also should motivate the technology community. For instance, the research team found that interventions where parents were involved in mHealth technology revealed greater health benefits to children.

"If you're designing technology, design it so parents and children interact around the technology," he said. "You get a bigger bang for your buck."

The ubiquity of mobile phones today contributes to the effectiveness of mHealth technology, according to the researchers.

"With an overwhelming percentage of individuals owning or having access to a mobile phone, mHealth interventions can have greater reach than in-person interventions," Fedele said. "Furthermore, mHealth programs can collect dynamic health-related data and deliver intervention content to individuals in their natural environment, outside of a clinical encounter, at key times that have a higher likelihood of modifying behavior. An example could be collecting data on percentage of time an individual has spent in sedentary activity and then delivering an individually tailored message to their mobile device promoting them to engage in some sort of physical activity."

The researchers hoped to follow up the investigation by discovering more about which behavior changes boost the effect of these types of interventions.

"We know that mHealth interventions can work and that parents should be involved, but we are left to guess at what specific strategies they should include," Cushing said.

In future research, the investigators aim to look at the efficacy of specific apps on the marketplace.

"Now that we know that these approaches can work, it would be a good idea to learn more about what features are valued by consumers and whether those features appear in commercially available apps," Cushing said.

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