Patients stick with smartphone activity trackers longer than wearable devices

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Doctors who want to track their patients' physical activity might have more luck doing it with smartphones than wearable fitness devices, according to a new Penn Medicine study. The data showed that patients

who used smartphones were 32 percent more likely to send in their daily step counts six months after being discharged from the hospital than those who used a wearable fitness tracker. Since smartphones have become near-ubiquitous, these findings—published in *JAMA Network Open*—signaled to researchers that it is possible to track physical activity on a wider level, which could improve efforts to remotely monitor patient behaviors.

"Most people with smartphones take them everywhere they go. Since carrying the phone is already a built-in habit, it makes it much easier to use the device to track activity levels," said the study's lead author, Mitesh Patel, MD, MBA, director of the Penn Medicine Nudge Unit and an assistant professor of Medicine. "While wearables can track other metrics, every time patient takes them off, there's a possibility that they may never put it back on again."

The team of researchers enrolled 500 patients who had been admitted to two different Philadelphia hospitals in their activity tracking program. Half were assigned to track step counts via an app on their own smartphones, while the other half were assigned to use a wearable device. Once discharged from the hospital, the devices were used to monitor daily step data, which patients could then synchronize to transmit to the researchers. Seven days of steps could be stored at time, but patients were prompted via emails, text messaging, or voice messages to sync up if they hadn't done so in four straight days.

The researchers tracked how many patients continued to send in their step data over multiple periods of time. While there was some attrition over time in both groups, at every interval, the number of patients synchronizing their data was higher in those using the smartphone app than those with wearables. At 30-days post-discharge, 87 percent of the smartphone group was still actively sending in their data compared to 82 percent of the patients with wearable devices. At 90 days, the numbers

stood at 78 to 68 percent, respectively. And at six months (180 days) after discharge, the smartphone group stood at 61 percent compared to 47 percent in the wearable group (a 32% relative difference).

While the study focused on comparing smartphone users and those with wearable devices, the team did find some significant differences in patient characteristics. These included that men were more likely to stick with reporting their activity than women, and patients with Medicaid insurance were almost twice as likely to not submit their data compared to patients with other insurance.

"It's important to consider the tradeoffs between smartphones that may be used for longer periods and wearables that can track other types of data like heart rate or sleep patterns," said co-author Daniel Polsky, Ph.D., an adjunct senior fellow in the Leonard Davis Institute of Health Economics at Penn and a professor at Johns Hopkins University. "With that, it's important to consider all factors and their affects, which could include things like demographic information."

This study was conducted as a part of research examining the possibility of predicting whether patients will be readmitted to a hospital after discharge. Moving forward, the researchers hope to determine whether smartphones or wearable devices are more effective in making these predictions.

"Our everyday health behaviors contribute significantly to our longer-term health," said Kevin Volpp, MD, Ph.D., the director of Penn's Center for Health Incentives and Behavioral Economics and a professor of Medicine, Medical Ethics and Policy, and Health Care Management. "These mobile devices give us a window into daily activity patterns that could be used to help design interventions to improve health outcomes."

More information: Mitesh S. Patel et al. Smartphones vs Wearable

Devices for Remotely Monitoring Physical Activity After Hospital Discharge, *JAMA Network Open* (2020). DOI: 10.1001/jamanetworkopen.2019.20677