

Your smartphone can detect bipolar disorder

Sensors in any smartphone can monitor mood changes and diagnose mental health issues like bipolar disorder



Mental disorders like bipolar disease can be monitored via smartphones Photo: Alamy

By Madhumita Murgia

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Italian researchers have found that smartphones can be used to diagnose and manage mental health illnesses such as bipolar disorder, just by using their inbuilt sensors as a proxy for sudden mood changes.

Bipolar disorder is a condition characterized by extreme mood swings that veer from hyperactivity and elation, to severe depression and lethargy.

Computer scientist Venet Osmani of the Trento, Italy-based Centre for Research and Telecommunication Experimentation for Networked Communities (CREATE-NET) uses data mining to analyse human behaviour and health.

He knew that people with bipolar disorder often demonstrate signature behaviour patterns and used smartphones to measure these patterns.

For example, the manic phase is often characterized by physical hyperactivity, which he measured by an accelerometer and a GPS; symptoms like rapid speech could be measured by sound analysis software and frequent conversations were monitored through phone call patterns.

Similarly, slow movement and fewer locations travelled, or sluggish speech and fewer conversations with others could be signs of the depressive phase.

The published results showed that for each patient, changes in their mood, or state of mental health, could be detected with an average precision of 96pc. This was measured via proxies like their speed and location of movement.

Since these were detected before an actual bipolar episode, this type of measure could lead to early detection of an oncoming mood change, and timely treatment for the patient.



Other mental disorders like depression could also be tracked using smartphones Photo: ALAMY

The study was set up in a psychiatric hospital in Tirol, Austria and involved 12 patients over 12 weeks, resulting in more than 1000 days of smartphone data in total.

During this time, patients' mental state was also determined by conventional methods (like counseling and evaluations) so the outcomes could be compared to the smartphone's diagnosis.

"This is a first step toward

Because symptoms of most mental disorders can only

using smartphone data to monitor symptoms of mental disorders."

Dr. Venet Osmani, author of the study

be seen as changes in a person's behaviour rather than a chemical or biological change, spotting these mood changes in time to treat them is particularly difficult.

Instead, patients are usually given subjective questionnaires to answer that merely infer, rather than measure, their illness. Usually by the time the

questionnaires are given out, a mental illness episode has already occurred.

An accurate way of diagnosing mood changes in real-time would be hugely useful both for patients and their health providers to predict oncoming symptoms.

This study, conducted in a real-world hospital setting, shows evidence of the potential of smartphones as a diagnostic tool in managing mental health patients' wellbeing.

Dr Osmani told the Telegraph that his lab was also looking at measuring other mental disorders via smartphones. "We have carried out another study, investigating whether physical activity data can be used to detect chronic stress and burnout," he said.

"On this basis, we have found that we can detect various stress levels with 71pc accuracy, solely based on the data provided by the accelerometer, while the subjects were holding the phone."

How we moderate

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