

Wrist accelerometers help researchers link sleep quality to psychiatric disease

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Multiple measures of sleep patterns and sleep efficiency are associated with lifetime diagnoses of mental illness, according to a new study that used wrist accelerometer data to track sleep. The study is publishing October 12th in the open-access journal *PLOS Medicine* by Shreejoy Tripathy of the University of Toronto and the Centre for Addiction and Mental Health (CAMH), Canada, and colleagues.

Sleep problems are known to be both symptoms of and modifiable risk factors for many [psychiatric disorders](#). In the new study, researchers

collected data on 89,205 individuals participating in the UK Biobank study who wore accelerometers on their wrist for 7 days between 2013 and 2015. The accelerometers were used to generate objective data on sleep timing, duration, efficiency, and variability. Data on psychiatric diagnoses—including schizophrenia spectrum disorders, bipolar disorder, [major depressive disorder](#), and [anxiety disorders](#)—as well as other health and sociodemographic information was available for all participants, who ranged in age from 43 to 79 and were 56% female.

The researchers found striking trends when they examined the associations between the sleep measures and inpatient psychiatric diagnoses. Each diagnosis was associated with a mean of 8.5 of the 10 accelerometer-derived sleep measures. Measures of sleep quality, such as sleep efficiency, were generally more affected by psychiatric diagnosis than measures of sleep duration. Effect sizes were small; the largest magnitude effect was observed for the association between sleep efficiency and major depressive disorder. Associations were replicated across ancestries and sexes.

"Our findings provide a rich clinical portrait of the ways in which sleep can be disrupted across individuals with lifetime mental illness," the authors say. "This work showcases the capacity of accelerometry to provide detailed, objective sleep measurements at scale, even across cohorts of tens of thousands of individuals."

The authors add, "This work showcases the power of wearable devices to provide fine-grained information about how sleep is disrupted in mental illness."

More information: Wainberg M, Jones SE, Beaupre LM, Hill SL, Felsky D, Rivas MA, et al. (2021) Association of accelerometer-derived sleep measures with lifetime psychiatric diagnoses: A cross-sectional study of 89,205 participants from the UK Biobank. *PLoS Med* 18(10):

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