A Smartphone- And Wearable- Based Biomarker For The Estimation Of Unipolar Depression Severity

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Drug development for mood disorders can greatly benefit from the development of robust, reliable, and objective biomarkers. The incorporation of smartphones and wearable devices in clinical trials provide a unique opportunity to monitor behavior in a non-invasive manner. The objective of this study is to identify the correlations between remotely monitored self-reported assessments and objectively measured activities with depression severity assessments often applied in clinical trials. 30 unipolar depressed patients and 29 age- and gender-matched healthy controls were enrolled in this study. Each participant's daily physiological, physical, and social activity were monitored using a smartphone-based application (CHDR MORE™) for 3 weeks continuously. Self-reported depression anxiety stress scale-21 (DASS-21) and positive and negative affect schedule (PANAS) were administered via smartphone weekly and daily respectively. The structured interview guide for the Hamilton depression scale and inventory of depressive symptomatology-clinical rated (SIGHD-IDSC) was administered in-clinic weekly. Nested cross-validated linear mixed-effects models were used to identify the correlation between the CHDR MORE™ features with the weekly in-clinic SIGHD-IDSC scores. The SIGHD-IDSC regression model demonstrated an explained variance (R) of 0.80, and a Root Mean Square Error (RMSE) of ± 15 points. The SIGHD-IDSC total scores were positively correlated with the DASS and mean steps-per-minute, and negatively correlated with the travel duration. Unobtrusive, remotely monitored behavior and self-reported outcomes are correlated with depression severity. While these features cannot replace the SIGHD-IDSC for estimating depression severity, it can serve as a complementary approach for assessing depression and drug effects outside the clinic.

To read the full paper, click the link below: A Smartphone- And Wearable- Based Biomarker For The Estimation Of Unipolar Depression Severity