Photoplethysmography signal can detect diabetes

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(HealthDay)—An application using the photoplethysmography (PPG)

signal, which is readily obtained from smartphones and wearable devices, can detect diabetes, according to a study presented at the annual meeting of the American College of Cardiology, held from March 16 to 18 in New Orleans.

Robert Avram, M.D., from the University of California in San Francisco, and colleagues examined whether diabetes could be detected using the PPG signal and a convolution neural network (CNN). Data were included for 22,298 individuals enrolled in the Health eHeart Study who used the Azumio smartphone app. Users were divided into training, development, and test datasets (70, 10, and 20 percent, respectively). To predict self-reported prevalent diabetes, a 34-layer CNN was fit using the training dataset. The model was tuned using the development dataset, and model discrimination was measured in the test dataset using an area under the receiver operating characteristic curve (AUC).

The researchers found that 6.0 percent of the participants had diabetes. Seven percent of the 1,440,000 PPG measurements were derived from participants with diabetes. In the test dataset, the AUC for predicting prevalent diabetes was 0.772. The negative predictive value was 97 percent.

"The potential to transition screening that's normally done by physicians or nurses to the patient themselves through a smartphone app is a very novel concept and gives us a glimpse into how health care might work in the future," Avram said in a statement.

 More information: Press Release
More Information

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