

New Non-Invasive Test Uses AI and Retinal Scans To Accurately Predict Risk of Chronic Kidney Disease

Mediwhale Inc. and Yonsei University College of Medicine Publish Study Results in Nature's Digital Medicine peer-reviewed journal

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/EINPresswire.com/ -- Chronic kidney disease (CKD) can be accurately predicted even before symptoms appear using an artificial intelligence (AI) algorithm combined with a non-invasive retinal eye examination,

according to a [study](#) just published in Nature Partner Journal's Digital Medicine by [Mediwhale, Inc.](#) and Yonsei University College of Medicine.



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CKD is a leading cause of cardiovascular disease and related death, and its prevalence has grown rapidly due to aging populations and the increase in hypertension and diabetes patients. Symptoms do not materialize until the disease reaches advanced stages, and once it occurs, it is irreversible, making early detection and prevention of risk factors crucial.

[Studies](#) have shown that the current standard tests in CKD screening, the estimated Glomerular Filtration Rate (eGFR) conducted using a blood test or urine protein test, have

shown limitations in accurately and early detecting kidney disease, especially in people with preserved kidney function.

In this study, Reti-CKD, a predictive risk score for CKD, was developed from a deep learning algorithm using retinal photographs. The rationale behind this approach lies in the shared characteristics between the retina and kidney, specifically their micro blood vessels. By

leveraging the information obtained from the retinal blood vessels, Reti-CKD enables the prediction of kidney disease risk. Notably, Reti-CKD offers a convenient and cost-effective solution as it can be readily administered in primary care using a fundus camera within a few minutes.

To develop the deep learning model, retina data from over 79,000 Koreans' health checkups were used, and another 35,000 individuals from the UK Biobank and Korean Diabetic Cohort were employed in model validation.

Based on these data sets, Reti-CKD showed superior prediction of future CKD risk compared to the conventional eGFR or urine test. Persons identified as high-risk can take preemptive measures that will eliminate or reduce the risk of progression to kidney deterioration.

Also, Reti-CKD clearly stratified the risk of CKD into four classifications, ranging from low-risk to high-risk groups, and accurately predicted the risk regardless of the presence of underlying diseases such as hypertension or diabetes.

Dr. Tyler Hyungtaek Rim, Chief Medical Officer (CMO) of Mediwhale, said, "The significance of Reti-CKD is that it can prevent CKD by identifying high-risk groups and taking preemptive measures before kidney function declines. We anticipate that proactive risk management, diligent monitoring, and timely treatment will greatly benefit many people around the world."

Dr. Young Su Joo, professor in the Department of Nephrology at Yonsei University College of Medicine, said, "We aim to further extend our research in predicting kidney function deterioration among CKD patients. Our goal is to develop a prediction model that can effectively pre-screen the high-risk group for end-stage chronic kidney disease and evaluate its utility."

About Mediwhale

Mediwhale is the AI-empowered health diagnostics company that uses non-invasive retina scans to help prevent heart and kidney diseases. Mediwhale's solutions use deep learning algorithms to detect disease risks even before symptoms appear. Mediwhale has been dedicated to making preventative care more affordable, accessible, safe, and convenient since being founded in 2016 in South Korea.

About Yonsei University College of Medicine

Yonsei University College of Medicine is the first modern medical institution in South Korea, and it has been a leading medical institution in the country for more than 130 years. Severance



Hospital is part of the Yonsei University College of Medicine. Severance Hospital operates approximately 2,400 beds across five general hospitals: the Yonsei Cancer Hospital, Rehabilitation Hospital, Cardiovascular Hospital, Eye Hospital, and Children's Hospital, and is in the pursuit to be the world's No.1 leader of medical treatment and patient care. Yonsei University College of Medicine continuously spreads the knowledge and experience to the global society in the field of healthcare and medical service. Accordingly, Yonsei University College of Medicine, is intimately communicating and collaborating with global society based on their professional knowledge and experience to guarantee universal health and improve health inequalities around the world.

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