# AI reduces underdiagnoses of common heart failure in Black patients

August 1 2024

Credit: Unsplash/CC0 Public Domain

AI can help reduce underdiagnosis of Black patients with a common type of heart failure, compared to in routine practice, new research finds.

The study used AI to understand the extent of heart failure with preserved ejection fraction (HFpEF) underdiagnosis across ethnicities, highlighting how algorithms could be used by clinicians to reduce bias and improve diagnoses. The findings are published in *JACC: Advances*.

"It is vital clinicians are aware of how heart failure presents in patients of all ethnicities if we are to effectively tackle inequalities within the condition," said Dr. Kevin O'Gallagher, Clinician Scientist and Honorary Consultant in Interventional Cardiology at King's College London.

It is estimated that more than 1 million people in the U.K. have heart failure, and around half of these have HFpEF. HFpEF happens when the heart pumps out blood normally, but cannot fill up as well, leading to signs and symptoms of heart failure, such as breathlessness, fatigue and dizziness. This can lead to a decreased quality of life.

The study was co-led by Dr. O'Gallagher, Clinician Scientist and Honorary Consultant in Interventional Cardiology at King's, and Professor Ajay Shah, BHF Chair of Cardiology and Director of the King's College London BHF Center of Excellence.

The team used an AI algorithm called Natural Language Processing (NLP), that can read and understand medical text and analyze electronic medical records. The AI tool identified nearly 1,973 patients who met the current European Society of Cardiology guidelines for a diagnosis of HFpEF. Of these patients, 64% were white, 29% were Black and 7% were Asian.

The team analyzed how the algorithm performed by seeing if these same patients would be effectively diagnosed in routine care without NLP and found that Black and Asian patients were less likely to be underdiagnosed using the AI.

Researchers believe this may be because HFpEF is diagnosed partly by using scores from a test called H2FPEF that is not used in the algorithm. It considers other conditions that could be contributing factors and happens to place a greater emphasis on atrial fibrillation, which was shown in this study to be more common in people with white and Asian backgrounds, compared to hypertension which was the more common contributor to risk in Black patients.

Clinicians having to rely on this score as a diagnostic tool may have led to more Black patients being missed. Researchers emphasize the need to improve how we pick up HFpEF, and analyze the ways we can use AI to help bring about a more accurate diagnosis.

"More research still needs to be done to improve diagnostic tools. It is crucial that everyone has the same chance of accessing life-enhancing treatment when they need it the most," said Dr. O'Gallagher.

**More information:** Sam Brown et al, Race- and Ethnicity-Related Differences in Heart Failure With Preserved Ejection Fraction Using Natural Language Processing, *JACC: Advances* (2024). DOI: 10.1016/j.jacadv.2024.101064

Provided by King's College London