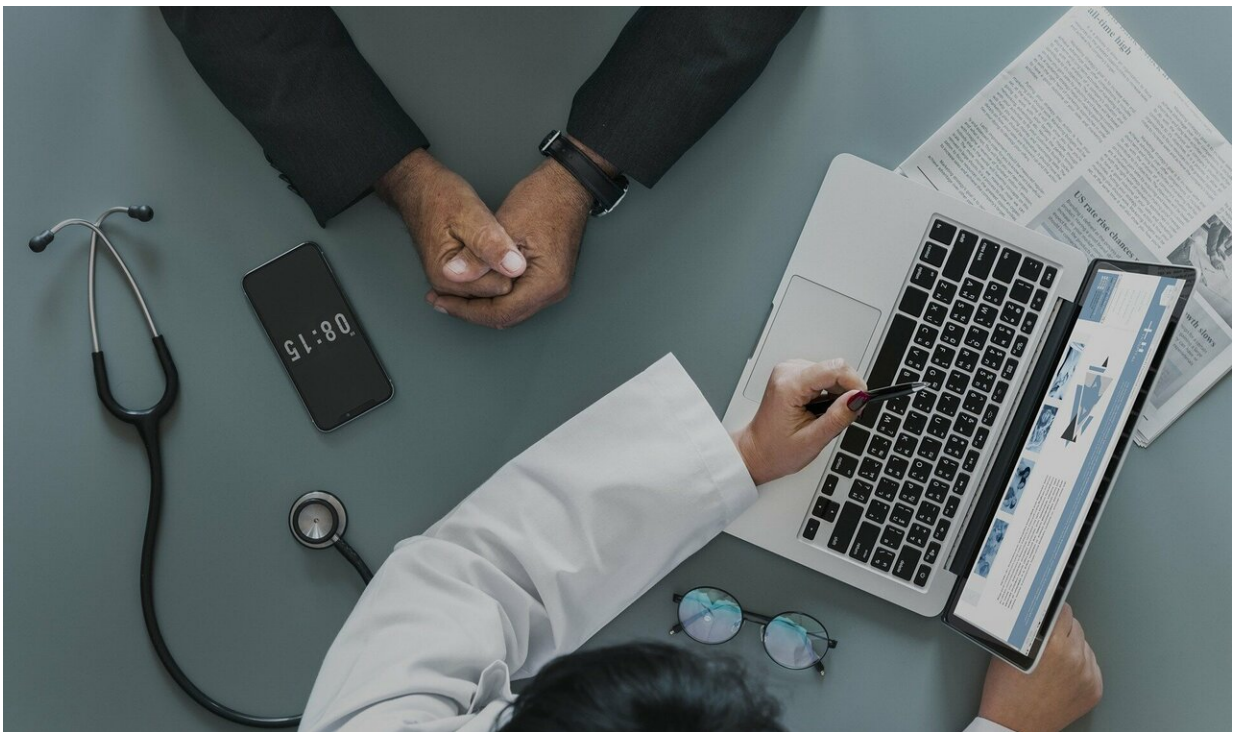# After 25 years of AI health tech research, computers are slowly beginning to listen to patients

February 22 2023

Credit: CC0 Public Domain

Patients' experiences of health conditions are slowly being integrated into health care AI studies, a review of 25 years of studies has found.

In a new paper published in *The Lancet Digital Health* along with an associated opinion piece, experts from the University of Birmingham and University Hospitals Birmingham have looked at more than 600 interventional studies on AI health care technologies.

While the team found that only 24% of studies have a patient-reported outcome element included in their work, there has been an increase in the number of such studies in recent years, with 2021 and 2022 seeing nearly two-thirds of all studies including patient-reported outcome elements.

Dr. Samantha Cruz Rivera from the Centre for patient-reported Outcomes at the University of Birmingham said, "The opportunities for AI to revolutionize health care are only going to make patients' lives better if those models consider how patients actually feel and respond to health care interventions. Our review shows that patient-reported outcomes, such as measures of symptom burden and quality of life, are increasingly being incorporated into AI studies, which is very encouraging.

"The future could see AI health care tech analyzing and raising an alert if a patient's health is declining, but such a future is going to depend on having large-scale patient-reported outcome datasets so that AI can support or drive care in a specific condition, and incorporate patient experience. Integrating PROs within AI can support the humanization of AI for health and ensure that the patient's voice is not lost in a rush to digitize and automate health care."

Chronic health leading the way

Patient-reported outcomes from chronic health conditions such as mental health and arthritis are being adopted into AI studies, more often than other conditions according to the review.

The research into patient-reported outcomes is a key theme of the National Institute for Health and Care Research (NIHR) Birmingham Biomedical Research Centre. The team involved in this paper say that the adoption of PROs for testing AI health care technologies in chronic conditions demonstrates how important patient voices are for long-term health management.

Melanie Calvert, Professor of Outcomes Methodology at the University of Birmingham, said, "Managing long term health conditions places a huge burden on patients and their families, but also the NHS and social care system. AI systems can help support patients and health care systems to aid decision-making, improve workflow and lead to more efficient care with improved outcomes. Encouragingly, we are seeing more research into AI tech solutions for chronic conditions incorporating patient-reported outcomes.

"It's clear that having technology that can analyze and predict patient outcomes to help prioritize care is going to be a part of health care's future. However, we must ensure that the patient-reported outcome data used to train the AI systems are applicable to the population they are intended to serve. If we don't do this, the gaps between advantaged and disadvantaged populations will only get worse."

Chronic conditions with the highest numbers of AI studies incorporating PROs:

- Osteoarthritis—57% (16 of 28 trials)
- Mental and behavioral health—54% (38 of 70 trials)
- Endocrine, nutritional, and metabolic health, such as diabetes—46% (22 of 48 trials); and
- Neurological system health—41% (18 of 44 trials).

More information: The role of patient-reported outcome measures in

trials of artificial intelligence health technologies: a systematic evaluation of ClinicalTrials.gov records (1997–2022), *The Lancet Digital Health* (2023).

Provided by University of Birmingham